Appendix A
Accident Prevention Plan

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FINAL
ACCIDENT PREVENTION PLAN
Groundwater and Soil Vapor Characterization in Support of Parcel C Remedial Action
Remedial Units C1, C4, and C5, and Building 241 Area
Hunters Point Naval Shipyard
San Francisco, California

RADIOLOGICAL EMAC
Contract Number: N62473-10-D-0807
Contract Task Order: 0008

Document Control Number: SHAW-0807-0008-0126

February 2012

Submitted to:

Base Realignment and Closure
Program Management Office West Naval Facilities Engineering Command
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Acronyms and Abbreviations

AHA	activity hazard analysis
APP	Accident Prevention Plan
CIH	Certified Industrial Hygienist
CO/COR	Contracting Officer/Representative
CPR	cardiopulmonary resuscitation
CSO	Caretaker Site Officer
EHS	environmental, health, and safety
FA	first aid
H&S	health and safety
HARP	Hazard Assessment Resolution Program
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IR	Installation Restoration
JSA	job safety analysis
Navy	U.S. Department of the Navy
OSHA	Occupational Safety and Health Administration
PM	Project Manager
ROICC	Resident Officer in Charge of Construction
RU	Remedial Units
QC	quality control
Shaw	Shaw Environmental & Infrastructure, Inc.
SSHP	Site Safety and Health Plan
SSHO	Site Safety and Health Officer
SOW	scope of work
SVE	soil vapor extraction
USACE	U.S. Army Corps of Engineers
ZVI	zero-valent iron

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Accident Prevention Plan/Site Safety and Health Plan Acknowledgment

WORKER ACKNOWLEDGMENT OF THE ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN AND SITE ORIENTATION

I have read or been trained to the contents of this Accident Prevention Plan/Site Safety and Health Plan. I understand the contents, and I agree to abide by its requirements. I understand that failure to comply with the provisions of this plan can lead to disciplinary action and possible termination from the project. Documentation of worker acknowledgment will be placed in the Project Records.

Printed Name	Signature	Date

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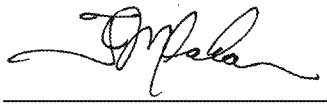
1.0 Signature Sheet

Prepared by:



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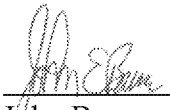

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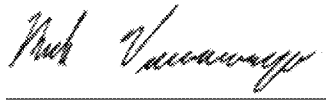

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2.0 Background Information

This project is being performed for the U.S. Department of the Navy (Navy) under Contract No. N62473-10-D-0807, Contract Task Order 0008. The purpose of this Accident Prevention Plan (APP) is to define requirements and designate safe practices to be followed during environmental remedial actions involving Remedial Units (RU) C1, C4, and C5, and Building 241 Area of Hunters Point Naval Shipyard, San Francisco, California. This APP will be used in conjunction with Shaw Environmental & Infrastructure, Inc. (herein referred to as Shaw) health and safety (H&S) policies and procedures to serve as the project APP. Shaw H&S policies and procedures are accessible to all Shaw employees through a secure intranet site. This APP includes a Site Safety and Health Plan (SSHP) as Attachment 1 and its activity hazard analyses (AHAs), which provide guidance to protect on-site personnel, visitors, and the public from hazards encountered during on-site project activities.

The procedures and guidelines contained herein are based on the best available information at the time of the plan's preparation. Specific requirements may be revised if new information is received or conditions change. Written amendments will document any changes made to the plan and will be included as an addendum to the SSHP.

2.1 Site Location, Description, and History

The main objectives of this project are to reduce soil and groundwater contaminant concentrations within RU-C1, RU-C4, and RU-C5 using zero-valent iron (ZVI) injection, anaerobic-aerobic in situ bioremediation, and monitored natural attenuation and to remove soil contaminants using a combination of soil vapor extraction (SVE) and excavation from the area in the vicinity of Building 241, the former foundry.

2.2 Background

RU-C1 is located in eastern Parcel C within Installation Restoration (IR) Site 28. RU-C1 includes Buildings 211, 231, and 253. Buildings 211 and 253 were used for machining; welding; assembly; painting; repair; and fabrication of a variety of electronic, optical, and ordnance-related equipment. The buildings housed paint booths, dip tanks, a vapor degreaser, resin impregnation tanks, sumps, and a parts washer. Building 231 was historically used for heavy industrial machining and housed several air treatment systems, sumps, sandblasting rooms, a boiler, and subfloor trenches and piping. Nine former underground storage tanks were associated with Buildings 211 and 253, and five were located near Building 231.

RU-C4 is located in southwestern Parcel C in portions of IR-28 and IR-29 in the vicinity of Buildings 272 (the former riggers shop) and 281, which was identified as the Electronics

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Weapon Precision Facility Machine Shop. Building 281 contained a paint room with five steel dip tanks. Nine underground storage tanks and three aboveground storage tanks were associated with RU-C4.

RU-C5 is located in the northernmost section of Parcel C in IR-06 and IR-25 near Building 134, which contained offices, machine shops, a refrigeration repair shop, an industrial quality and reliability assurance laboratory, and storage facilities. A dip tank labeled "chlorinated materials" is built into the foundation and drains to a sump partially inside and partially outside of the building. An oil/water separator that connects to the sump drains was located outside of Building 134. A fuel tank farm, 16 aboveground storage tanks, and 2 pump house buildings located southwest of Building 134 were removed in 1993.

Building 241 is located on the western side of Parcel C in IR-30 between Fisher and Spear Avenues, southwest of the Navy contractors' offices. Benzene has been associated with the Building 241 site.

2.3 Scope of Work

The proposed fieldwork comprises a combination of investigation and remediation activities including excavating, waste disposal, drilling, SVE, and groundwater injections in several Parcel C areas.

The initial phase of fieldwork is anticipated to take up to 6 weeks. The second phase of fieldwork will take approximately 17 months.

2.3.1 Source Removal-Excavation and Backfill

Approximately 28,000 cubic yards of contaminated soil will be excavated from a 75,000-square-foot area within the Parcel C footprint using hydraulic excavators, wheel loaders, and 10-yard dump trucks. The Shaw field team will excavate to depths of 2 to 10 feet below ground surface. The excavated soil will be hauled to the on-site stockpile area. Soil will then be characterized and transported to the Navy's on-site waste storage area.

Asphalt and concrete debris that are generated from the excavation areas within the Parcel C area will be stockpiled and processed for reuse on site. If underground items in the excavation footprint are encountered (e.g., piping, tanks, railroad ties, rail, etc.), they will be removed, segregated, and stockpiled until all excavations are completed. Abandoned tanks, if exposed during excavation, will be removed and handled in accordance with state and county regulatory requirements.

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Once confirmation sampling results are received, the excavation areas will be backfilled with the placement of 2-inch minus angular rock and geotextile fabric over the rock, then filled with clean soil and compacted.

2.3.2 Source Removal – Soil Vapor Extraction

The Shaw field team will first perform soil gas sampling to delineate the SVE treatment footprint. Soil gas sampling is discussed in further detail later in this section. Following completion of soil gas sampling, a drilling subcontractor will install 4-inch-diameter SVE and 2-inch-diameter vapor monitoring wells using hollow-stem auger drilling. Wellhead vapors will then be measured using a photoionization detector to establish baseline conditions prior to SVE treatment.

The Shaw field team will install SVE systems at plumes as indicated in the *Final Feasibility Study for Parcel C, Hunters Point Shipyard, San Francisco, California* (SulTech, 2008) and *Final Record of Decision for Parcel C, Hunters Point Shipyard, San Francisco, California* (Navy, 2010). Polyvinyl chloride piping will be connected from the vapor extraction wells to the SVE system at each treatment location. Piping will generally be laid at grade but will be placed underground when crossing traffic areas. These SVE systems will have extracted vapor run from the installed wells through in–line carbon canisters using blowers or vacuum pumps. The carbon canisters are used to remove chlorinated solvents and other volatile organic compounds in the extracted soil vapor streams before their release into the atmosphere. Each system will be operated for approximately two weeks. No carbon change-out will be performed during the two-week operation period at each SVE system.

2.3.3 Groundwater Treatment Using Direct Injection

The organic substrate to be used is Wilclear Plus™, which is a combination of sodium lactate and Accelerite™, a mixture of nutrients, to enhance biodegradation. Lactate and molasses will also be used to enhance in situ anaerobic bioremediation. Prior to injecting the anaerobic substrate, Shaw's injection subcontractor will pneumatically fracture each injection interval using nitrogen gas to increase the permeability of the formation. Shaw will apply this technology for distribution of both the ZVI and organic bioremediation substrates.

2.3.4 Performance Monitoring Well Installation and Decommissioning

Nine active wells within the proposed excavation areas will be decommissioned by over-drilling or by pressure-grouting. Twenty new monitoring wells will be installed using an air-rotary casing hammer or equivalent rig at bedrock locations and a hollow-stem auger rig at locations underlain by soil, sediment, or fill.

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2.3.5 Groundwater Sampling and Monitoring

Grab groundwater samples will be collected from temporary direct-push technology well points and existing monitoring wells to aid in the placement of new monitoring wells and to help delineate the areas requiring groundwater treatment. Grab groundwater samples will be analyzed using an on-site mobile laboratory.

2.3.6 Soil Sample Collection and Analysis

The Shaw Project Chemist will collect one grab sample from each 50- by 50-foot grid and one grab sample from every 50 linear feet of excavation sidewall. If the sidewall is greater than 3 feet deep, the Shaw Project Chemist will collect two sidewall samples for every 50 linear feet.

2.3.7 Soil Vapor Sample Collection and Analysis

Up to 90 temporary soil vapor gas monitoring points will be installed at a depth of approximately 6 feet below ground surface with a direct-push technology drill rig equipped with a core barrel or with a small-diameter hand auger. The Shaw Field Technician will collect soil vapor from the probes using a syringe. The samples will be analyzed by the on-site, mobile laboratory.

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3.0 Statement of Safety and Health Policy

This section presents Shaw's corporate safety policy, as well as safety program and accident experience goals.

3.1 Corporate Safety Policy

This section states Shaw's corporate safety policy, which has been signed by George Bevan, President of Shaw Environmental & Infrastructure, Inc.

> Shaw expects all of our employees, clients, and partners to uphold the highest environmental, health, and safety (EHS) standards to promote a positive and proactive safety attitude and to exhibit a heightened awareness of their surroundings both on and off the job. We must identify risks and hazards and implement appropriate controls in order to provide an injury-free work environment where people, equipment, and the environment are not placed at unreasonable threat of injury or damage. We will continually strive to be good citizens in our own community, as well as in every community in which we operate.
>
> The EHS Program and the components of our Occupational Health & Safety Management System have been developed to guide us in our daily activities. We also commit ourselves to continual improvement in EHS management. Further, I ask that you include our EHS process in all aspects of your work, assist in the maintenance of our process, and communicate this policy to all persons working for or on behalf of Shaw with the intent that they are made aware of their individual EHS obligations.
>
> Through compliance with this policy, we will all actively participate in this process and advocate this philosophy. Together, we can accomplish our goals and exceed the minimum requirements provided by applicable laws and regulations, thus resulting in all stakeholders being proud to be a part of a team that truly values the importance of health, safety, and respect for the environment. Accordingly, we will maintain the position as a recognized leader in all of our business endeavors through a stewardship-based approach for our fellow employees, the environment, and the communities in which we live and work.
>
> We are committed to the spirit and intent of this EHS policy statement and the laws, rules, and regulations to which we subscribe at its foundation.

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3.2 Safety Program Goals, Objectives, and Accident Experience Goals

Shaw considers safety the highest priority during work at a site containing potentially hazardous materials and has established a goal of **zero incidents** for all projects. All projects will be conducted in a manner that minimizes the probability of near misses, equipment/property damage, or injury. Shaw will establish programs to recognize people and projects that demonstrate excellence in safety performance. Shaw will use safety observation programs to identify and correct unsafe acts and conditions. Safety awareness programs will be used to provide continuous training and development of good safety practices. Shaw site supervision will investigate all incidents to determine root causes and institute corrective actions to prevent recurrence. Shaw will provide and enforce safety rules to protect employees, subcontractors, clients, and the public.

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4.0 Responsibilities and Lines of Authority

This section discusses responsibilities and lines of authority for safety and occupational health.

4.1 Responsibilities

Shaw is ultimately responsible for the implementation of an effective safety and occupational health program. Safety responsibilities, accountability, and lines of authority are also discussed in Section 2.0 of the SSHP. The Project Manager (PM), Task Manager, Health and Safety Manager (HSM), Project Certified Industrial Hygienist (CIH), and Site Safety and Health Officer (SSHO) are responsible for formulating and enforcing H&S requirements, and implementing the SSHP.

Managers must conduct their businesses in compliance with governmental safety regulations and company procedures. All Shaw H&S procedures (*Health and Safety Policies and Procedures Manual* [Shaw, 2010]) will be implemented for all Shaw employees on all projects where Shaw is the subcontractor or a joint venture partner. If Shaw is the prime contractor, Shaw procedures will be applied to all Shaw and subcontractor personnel.

4.2 Lines of Authority

The lines of authority are as follows:

1. **PM:** Mr. John Baur is responsible for all aspects of the project and ensuring the development and implementation of the APP and SSHP.

2. **Task Manager:** Mr. Wayne Akiyama will provide support to the PM as the local contact for site-specific issues.

3. **HSM and CIH (Qualified Person):** Mr. Fred Mlakar is responsible for developing and approving the APP/SSHP policies and procedures in accordance with applicable requirements, professional industrial hygiene standards, and safety practices. He has the authority to suspend or modify work practices for safety reasons and to dismiss individuals whose conduct endangers the H&S of others. Mr. Mlakar's resume is included in Attachment 2.

4. **SSHO (Competent Person):** Mr. Mark Vennemeyer has a direct line of communication and authority from the HSM to implement site-specific H&S requirements for this project. He is responsible for serving as the Competent Person as defined by Title 29, Code of Federal Regulations, Section 1926.32(f); coordinating daily site safety meetings; evaluating working conditions and making recommendations to the PM and HSM to modify H&S procedures; inspecting all personal protective equipment prior to use; enforcing all site-specific H&S procedures; and observing field team members for signs of exposure, stress, or other

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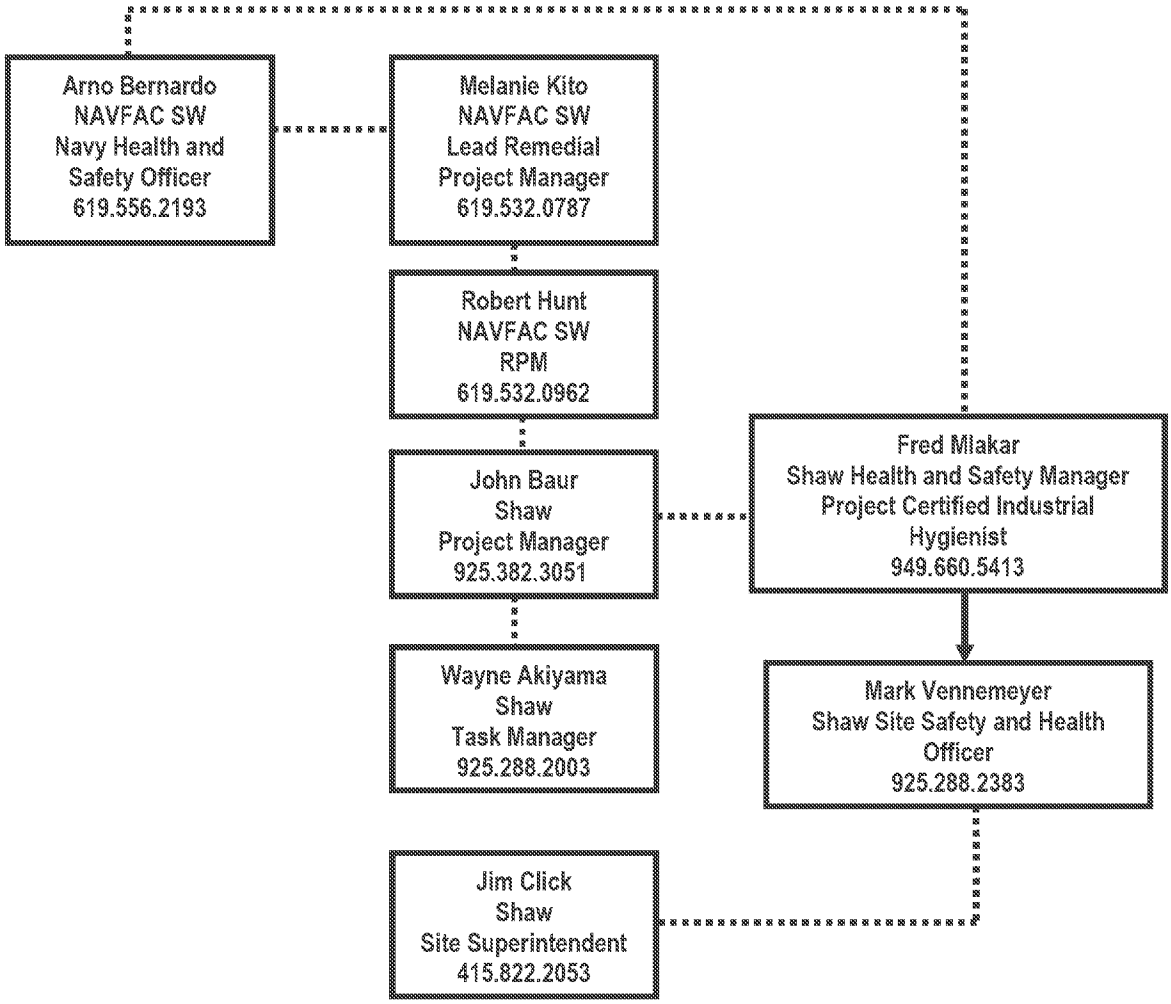
conditions related to pre-existing physical conditions and site work activities. No work will be performed unless the SSHO or a qualified alternate SSHO is present on the job site. Mr. Mark Egan, Mr. Lee Laws, and Mr. Eric Watabayashi are alternate SSHOs. A resume for Mr. Vennemeyer is included in Attachment 2. Proof of competency for competent person(s) is included as Attachment 3.

5. **Site Superintendent:** Mr. Jim Click is responsible for field implementation of the APP.

6. **Field Team Members:** These team members are responsible for reviewing and following the APP/SSHP and reporting unsafe practices to the SSHO and/or PM.

7. **Navy Health and Safety Officer:** Mr. Arno Bernardo is responsible for reviewing this APP/SSHP and making recommendations concerning the document to the Navy Remedial Project Manager.

Lines of Authority



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4.3 Pre-Task Safety and Health Analysis

Shaw uses a three-stage hazard analysis procedure as follows:

- AHAs are used to anticipate hazards that are known before fieldwork starts.
- Job safety analyses (JSAs) are performed on site daily to address those hazards that could not be anticipated during the development of AHAs.
- Shaw employees are trained to individually use the Hazard Assessment Resolution Process (HARP) throughout the workday.

These three processes are explained as follows:

AHAs have been developed for all major tasks performed for the project and are provided as an enclosure in the SSHP (Attachment 1). An AHA describes the sequence of work, specific hazards anticipated, and control measures that will be used to minimize or eliminate each hazard. The applicable AHAs will be reviewed by all members of the crew performing the activity. An AHA will also be prepared when new tasks are added. Work will not proceed on a particular task/phase until the AHA has been reviewed with the work crews. Additions or changes to the AHAs, which are less conservative or allow for a downgrade in personal protective equipment requirements, must have written approval from the HSM.

The names of the competent/qualified person(s) required for a particular activity (e.g., excavations, scaffolding, fall protection, and other activities), as specified by the Occupational Safety and Health Administration (OSHA), will be identified and included in the AHA. If more than one competent/qualified person will be used on the AHA, a list of names will be appended to the AHA. Those listed will be competent/qualified for the type of work involved and familiar with current site safety issues. If a new competent/qualified person (not on the original list) is added, the list will be updated (this is an administrative action not requiring an updated AHA). The new person will acknowledge in writing that they have reviewed the AHA and are familiar with current site safety issues.

JSAs must be completed by the crews each day for each task that will be accomplished, as required by Shaw Procedure No. HS045, *Job Safety Analysis* (Shaw, 2010). The JSA will be revised, as necessary, when unforeseen circumstances arise or work-site conditions change. Any revisions will be immediately communicated to the affected site workers. If the need to complete an unplanned task becomes necessary at any point throughout the day, then a new JSA will be prepared to cover that task. JSAs will be completed using separate JSA forms and the Tailgate Safety Meeting Combination Form (SSHP, Enclosure 3 [Field Forms]).

Shaw employees are trained to apply the HARP prior to starting each task. HARP is a brief, paperless, general risk assessment. The objective of HARP is to anticipate, identify, and

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eliminate or control potential real-time workplace hazards that could lead to an accident. HARP requires workers to take time (less than two minutes) before starting a job to become aware of the immediate work environment so as to detect conditions unanticipated by work planning. The objective of HARP is to avoid hurrying, thinking the job is routine or simple, believing nothing bad can happen, not talking about precautions with co-workers, and not bringing a "gut feeling" to the attention of supervisors. HARP involves a three-step process:

1. Assess the hazard(s) and risk(s) to identify what could go wrong and what is the worst thing that could happen.
2. Analyze each identified risk and implement the appropriate safeguards to control the hazards.
3. Act to ensure safe operations as follows:
    a. Eliminate or control the hazard.
    b. Communicate hazards and precautions to co-workers and supervisor. Mark the hazard with warning tape, signs, or tags, if necessary.
    c. Do not proceed until it is safe. If the risk is unacceptable or if a hazard cannot be satisfactorily controlled, then stop work and contact the SSHO or HSM.

4.4 Noncompliance with Safety Requirements

To protect the H&S of all personnel, employees that knowingly disregard safety policies/procedures may be subject to disciplinary actions up to and including termination. A mechanism is necessary to apply disciplinary action consistently to employees who jeopardize the safety of themselves and their co-workers by not following the established plans, policies, and procedures. Therefore, *Guidelines for Standard Safety Disciplinary Actions* (Attachment 4) is applicable and in effect for this project.

4.5 Management Accountability

The implementation of effective safety and health practices is a key measure of managerial performance. Annual employee performance evaluations are adversely impacted for supervisors and managers who are deficient in these responsibilities. Supervisors and managers who are willfully negligent in complying with safety policies and procedures are subject to disciplinary action, up to and including termination.

Management personnel, with the assistance of the internal H&S professional staff, will conduct audits to assess the effectiveness of the safety program(s) in place and to identify areas for improvement. All deficiencies will be promptly corrected.

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5.0 Subcontractors and Suppliers

Each subcontractor working on the project site will be required to adhere to the APP/SSHP and the requirements presented in the following sections.

5.1 Subcontractor/Supplier Coordination and Control

Subcontractors will comply with the requirements for site safety as outlined in Shaw Procedure No. HS011, *Contractor Safety and Health Rules* (Shaw, 2010). The Site Superintendent and PM will be responsible for the conduct and control of Shaw subcontractors.

All subcontractors are screened for safety performance and compliance with federal alcohol and drug testing requirements prior to being issued any contract for site work. Subcontractors will comply with the requirements for site safety as detailed in the SSHP.

5.2 Subcontractor/Supplier Safety Responsibilities

Depending on the job activity, all subcontractor employees are subject to the same training and medical surveillance requirements as Shaw personnel. All activities involving the potential for exposure to hazardous waste materials will require medical and training certification as mandated by Title 29, Code of Federal Regulations, Section 1926.65. All subcontractor personnel will be required to sign in daily and to attend a daily meeting discussing operations and safety issues. The subcontractor reports directly to the PM. All incidents involving subcontractor employees will be reported to the PM, and a copy of the subcontractor's injury/illness report will be submitted to the HSM within 24 hours.

Subcontractors are required to sign the APP/SSHP Acknowledgment form and comply with all requirements of this APP. Subcontractors not in compliance will be immediately dismissed from the site.

Subcontractors will not ride on tractors, forklifts, or similar vehicles unless specific seats and seat belts are provided. Trucks will be loaded and unloaded in a safe and effective manner, and materials will be stored safely in designated locations only. Associated packaging will be properly disposed of, and litter will not be permitted to be scattered or blown from truck beds. Operators of mobile equipment on site must observe all traffic rules such as speed limits and the right-of-way of pedestrians. Any subcontractor operating Shaw vehicles will have to meet the same driving safety training requirements as a Shaw employee. Driver safety retraining is required every two years.

AHAs are often necessarily prepared well before the start of fieldwork and before subcontractors are selected. However, the AHAs do require subcontractor input and experience from previous

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projects that were similar in scope. Once project-specific subcontractors are selected, they will be given the opportunity to review, revise, and/or create AHAs that apply to their operations. In addition, they will be involved with Shaw's JSA procedures, which, in effect, update the AHAs on a daily basis.

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6.0 Training

This section discusses the training requirements for the project.

6.1 Safety Indoctrination Training

All Shaw or subcontractor employees performing on-site work under this contract will receive initial safety indoctrination training prior to commencement of actual fieldwork. This training will be performed by the SSHO or his alternate. At a minimum, this initial training will include, but not be limited to, the contents of this APP and subsequent attachments and enclosures.

6.2 Mandatory Training and Certifications

In accordance with Hazardous Waste Operations and Emergency Response (HAZWOPER), *Safety and Health Requirements Manual, EM 385-1-1*, Section 28 (U.S. Army Corps of Engineers [USACE], 2008), and Shaw Procedure No. HS050, *Employee and Subcontractor Training Requirements* (Shaw, 2010), the following mandatory training and certifications applicable to this project will include at a minimum the following:

- 40-hour HAZWOPER training
- 24-hour supervised training
- 8-hour Hazardous Waste Supervisor training
- Cardiopulmonary resuscitation (CPR) and first-aid (FA) training

Re-certification or refresher training for the cited mandatory training will occur in accordance with the following schedule:

- 8-hour HAZWOPER refresher training will be performed annually for employees who completed the initial 40-hour course.
- CPR training will be renewed every two years.
- FA training will be renewed every two years.

Shaw employees who are designated as FA and CPR responders will also have completed blood-borne pathogen training annually and adhere to Shaw Procedure No. HS512, *Handling of Blood or Other Potentially Infectious Material* (Shaw, 2010).

The SSHO will have completed the 30-hour OSHA construction safety class or an equivalent course applicable to the work to be performed and given by qualified instructors.

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Personnel may use portable fire extinguishers only to extinguish small fires, if the employee has been trained and the employee is confident that the small fire can be safely extinguished.

All Shaw personnel operating motor vehicles will complete biannual defensive driver training. Additional periodic safety and health training will be provided through daily safety meetings. Daily safety meetings will comply with Shaw Procedure No. HS051, *Tailgate Safety Meetings* (Shaw, 2010). Additional information on training requirements is presented in Section 8.0 of the SSHP (Attachment 1).

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7.0 Safety and Health Inspections

This section discusses the requirements for safety and health inspections.

7.1 Inspections

The SSHO (competent person) will conduct safety and health inspections daily during periods of work activity to determine whether operations are being performed in accordance with the APP, SSHP, and applicable requirements and regulations. The SSHO will document the daily inspections and maintain a written log that includes area of operation inspected, date of inspection, identified hazards, recommended corrective actions, and estimated and actual dates of corrections. The safety log will be attached to the Contractor's Daily Quality Control (QC) report. In addition, Contractor QC personnel—as part of their QC responsibilities—will conduct and document daily and occupational health inspections in their daily QC logs.

Shaw will conduct periodic (at least monthly when work is in progress) inspections of the project site in accordance with H&S Procedure No. HS021c, *Accident Prevention Program: Management Safety Inspections* (Shaw, 2010). These inspections are performed by the PM or designee and documented on the Project Safety Inspection Report form.

All safety deficiencies and corrective actions will be tracked on the Safety and Occupational Health Deficiency Tracking Log, which will be posted at the project safety and health bulletin board located in an area commonly used by employees. For sites where a fixed support area is not available, the log will be maintained by the SSHO and be readily available to all on-site personnel. The log will include the following:

- Date deficiency is identified
- Description of deficiency
- Name of person responsible for correcting deficiency
- Projected resolution date
- Date resolved

The timely completion of corrective actions will be verified by the SSHO, HSM, and PM.

7.2 External Inspections/Certifications

Shaw does not anticipate, but may consider, the use of outside sources to provide safety inspections, as necessary.

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As required, safety equipment will comply with appropriate regulations of OSHA, the National Institute for Occupational Safety and Health, the American National Standards Institute, ASTM International, the U.S. Coast Guard, or other recognized certification organizations.

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8.0 Accident Reporting

This section discusses the requirements for accident reporting.

8.1 Exposure Data (Labor-Hours Worked)

The H&S Director for Shaw tracks and maintains labor-hours worked and incident records for federal reporting requirements (OSHA 300 Log [Summary of Work-Related Injuries and Illnesses]). Incident rates are tracked for each business line.

8.2 Accident Investigations, Reports, and Logs

Project personnel are required to report all near misses, injuries, illnesses, and accidents to their immediate supervisor. The SSHO will immediately arrange appropriate medical care as required. Once immediate medical care for the injured personnel or other critical emergency procedures has been accomplished, the SSHO will follow the Incident Notification, Reporting, and Management Procedure. In the event that an accident results in an employee being sent to a doctor, the Return-to-Work Examination Form will be completed by the attending physician on the date of treatment and will state one of the following conditions:

- Employee may return to full duty.
- Employee may return to limited duty (with type of limitations).
- Employee is unable to return to work.

A copy of this release will accompany the accident report.

For injuries and vehicle accidents, the scene will be secured to prevent additional injury/incident and to administer on-site FA Emergency assistance will be arranged prior to making any other notifications. After immediate emergency attention has been given, all incidents will be reported to the PM and HSM. All accidents will be reported to the Contracting Officer/Representative (CO/COR).as soon as possible but not more than 24 hours afterwards. The following require immediate accident notification to the CO/COR:

- A fatal injury
- A permanent total disability
- A permanent partial disability
- The hospitalization of three or more people resulting from a single occurrence
- Property damage of $200,000 or more

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The SSHO will immediately investigate all near misses, injuries, illnesses, and accidents to determine the causal factors. The SSHO will document any unsafe acts or conditions that occurred or existed at the time of the accident. The SSHO will submit the appropriate reports within 24 hours to the Shaw Safety Department in Baton Rouge, Louisiana, in accordance with H&S Procedure No. HS020, *Accident Prevention Program: Reporting, Investigation, and Review* (Shaw, 2010).

Corrective actions will be determined and implemented to prevent the recurrence of the accident; responsibility for implementation of corrective actions will be assigned. The final report and required forms will be submitted to the HSM within five days of the incident. The PM will submit the findings of the investigation along with appropriate corrective actions to the CO/COR on USACE Form 3394 as soon as possible but no later than five working days following the accident. Corrective actions will be implemented as soon as reasonably possible. A log of OSHA-recordable injuries/illnesses will be maintained.

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9.0 Plans, Programs, and Procedures Required by EM 385-1-1

This section discusses the plans, programs, and procedures required by the *Safety and Health Requirements Manual, EM 385-1-1* (USACE, 2008).

9.1 Layout Plans

Temporary construction facilities will not be needed for this project.

9.2 Emergency Response Plans

An Emergency Action Plan is provided in the SSHP (Attachment 1).

9.3 Plan for Prevention of Alcohol and Drug Abuse

Shaw is firmly committed to providing employees with a safe and healthful workplace and to providing clients and the public with safe and efficient services. Employee involvement with the use; possession; or sale of alcohol, illegal drugs, or any substance represented as a controlled substance creates an impediment toward meeting these commitments and is prohibited.

At no time while on duty may employees use or be under the influence of alcohol, narcotics, intoxicants, or similar mind-altering substances. Employees found under the influence of or consuming such substances will be immediately removed from the job site, as specified in the *Safety and Health Requirements Manual* (Section 01.C.02) (USACE, 2008).

All employees of Shaw and its subcontractors are subject to drug and alcohol testing as described in H&S Procedure No. HS101, *Drug and Alcohol Testing* (Shaw, 2010). Post-accident drug and alcohol testing is a requirement of Shaw when not prohibited by state or local law.

9.4 Site Sanitation Plan

Shaw will provide potable drinking water to site employees. On-site toilets, washing facilities, and waste disposal arrangements will be provided by a contracted service.

9.5 Access and Haul Road Plan

An Access and Haul Road Plan is not required based on the current scope of work (SOW) and existing site conditions.

9.6 Respiratory Protection Plan

The primary objective of respiratory protection is to prevent employee exposure to atmospheric contamination. When engineering measures to control contamination and respirable hazards are not feasible, or while they are being implemented, personal respiratory protective devices will be

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used. Shaw's respiratory protection requirements are specified in H&S Procedure No. HS601, *Respiratory Protection Program* (Shaw, 2010).

The HSM and Project CIH have determined that American Conference of Governmental Industrial Hygienists Threshold Limit Values are not likely to be exceeded during the execution of this project. Therefore, the use of respiratory protective equipment is not anticipated. If conditions change necessitating respiratory protection, a program will be written and implemented pursuant to *Safety and Health Requirements Manual, EM 385-1-1,* Section 05.G (USACE, 2008).

9.7 Health Hazard Control Program

Potential health hazards are addressed in the SSHP (Attachment 1).

9.8 Hazard Communication Program

Material safety data sheets for chemicals that may be required during site operations will be available on site and will be updated by the SSHO as new chemicals are procured. Shaw H&S Procedure No. HS060, *Hazard Communication Program* (Shaw, 2010), will be implemented on site if necessary.

9.9 Process Safety Management Plan

A Process Safety Management Plan is not required based on the current SOW.

9.10 Lead Abatement Plan

A Lead Abatement Plan is not required based on the current SOW.

9.11 Asbestos Abatement Plan

An Asbestos Abatement Plan is not required based on the current SOW.

9.12 Radiation Safety Program

The basewide radiological contractor has prepared a radiological work instruction for this project to address radiological awareness training and monitoring. Appendix E of the Work Plan contains the radiological support and work instructions.

9.13 Abrasive Blasting Plan

An Abrasive Blasting Plan is not required based on the current SOW.

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9.14 Heat/Cold Stress Monitoring Plan

Heat stress awareness, monitoring, and prevention are addressed in Section 3.6.1 of the SSHP (Attachment 1).

9.15 Crystalline Silica Monitoring Plan

Potential silica dust exposure from concrete coring operations is addressed in Section 3.2.1 of the SSHP (Attachment 1).

9.16 Night Operations Lighting Plan

Shaw will not perform work during hours of low lighting. A Night Operations Lighting Plan is not required based on the current SOW.

9.17 Fire Prevention Plan

Type-ABC fire extinguishers will be available to contain and extinguish small fires. The fire department will be summoned in the event of any fire on site.

9.18 Wild Land Fire Management Plan

A Wild Land Fire Management Plan is not required based on the project location and current SOW.

9.19 Hazardous Energy Control Plan

The need for equipment-specific lock-out/tag-out procedures is not anticipated.

9.20 Critical Lift Plan

A Critical Lift Plan is not required based on the current SOW.

9.21 Contingency Plan for Severe Weather

The SSHO will monitor weather conditions. Outdoor activities will be suspended in the case of severe weather such as lighting, heavy rains, or winds. Upon seeing lightning or hearing thunder, outdoor activities will be suspended, and personnel will be evacuated to safe areas (i.e., inside vehicles or buildings). Thunderstorms can be expected when clouds with dark bases appear and wind speeds pick up.

People who have been struck by lightning do not carry an electrical charge and are safe to handle. Workers should apply FA immediately to the injured person, if qualified to do so, and get emergency help promptly.

Outdoor activities may resume 30 minutes after the last bolt of lightning was observed and the last clap of thunder was heard.

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Safe areas include:

- Fully enclosed metal-topped vehicles with windows up
- Substantial and permanent buildings

Unsafe areas include:

- Small structures including huts and rain shelters
- Nearby metallic objects such as fences, gates, instrumentation, electrical equipment, wires, and power poles

The following will also be avoided when lightning is in the area:

- Trees
- Water
- Open fields
- Use of hard-wired telephones and headsets

If workers are hopelessly isolated from shelter during close-in lightning, they should adopt a low crouching position with feet together (standing up on toes, if possible) and hands on ears.

Remember the warning phrase from the National Lightning Safety Institute: "If you can see it (lightning), flee it; if you can hear it (thunder), clear it."

9.22 Float Plan

A Float Plan is not required based on the current SOW.

9.23 Site-Specific Fall Protection and Prevention Plan

A Site-Specific Fall Protection and Prevention Plan is not required based on the current SOW.

9.24 Demolition Plan

A Demolition Plan is not required based on the current SOW.

9.25 Excavation/Trenching Plan

An Excavation/Trenching Plan is not required at this time. An Excavation/Trenching Plan will be addressed in the Work Plan for remedial action.

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9.26 Emergency Rescue (Tunneling)

Tunneling is not anticipated based on the current SOW.

9.27 Underground Construction Fire Prevention and Protection Plan

An Underground Construction Fire Prevention and Protection Plan is not required based on the current SOW.

9.28 Compressed Air Plan

A Compressed Air Plan is not required based on the current SOW.

9.29 Formwork and Shoring Erection and Removal Plan

A Formwork and Shoring Erection and Removal Plan is not required based on the current SOW.

9.30 Precast Concrete Plan

A Precast Concrete Plan is not required based on the current SOW.

9.31 Lift Slab Plan

A Lift Slab Plan is not required based on the current SOW.

9.32 Steel Erection Plan

A Steel Erection Plan is not required based on the current SOW.

9.33 Site Safety and Health Plan for Hazardous, Toxic, and Radioactive Waste Work

An SSHP is presented as Attachment 1 to this APP.

9.34 Blasting Safety Plan

A Blasting Safety Plan is not required based on the current SOW.

9.35 Diving Plan

A Diving Plan is not required based on the current SOW.

9.36 Confined Space Program

Confined space entry is not anticipated based on the current SOW.

9.37 Dust Control Plan

Construction activities associated with this project will be designed to control, prevent, and minimize the release of respirable dust particulates based on work and weather conditions. Fugitive dust will be controlled by spraying water from a water truck, water trailer, or nearby fire

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hydrant if needed. At the end of each workday, the work areas will be swept or washed as appropriate to minimize the potential for fugitive dust emission during evening hours. Care will be taken to avoid excessive water application and to minimize discharge of dust-control spray water to the storm drain system.

9.38 Traffic Control Plan

Remedial activities will be conducted in vehicle parking areas, vehicle thoroughfares, and pedestrian walkways. Traffic-orientated issues will be discussed with the appropriate parties prior to the start of work. Modifications to plans will be submitted as necessary.

Traffic Control Plans will be submitted to the Caretaker Site Office (CSO) and Resident Officer in Charge of Construction (ROICC) prior to the start of work at a given IR site or excavation area. Traffic Control Plan submittals will include site maps showing proposed work sites, flagging, delineators, barricades, and/or signs as appropriate to direct pedestrians and vehicle traffic.

The following parties will be notified at least three working days in advance of thoroughfare detours or when implementing a construction detour:

- Hunters Point Naval Shipyard Security
- ROICC
- CSO
- Other contractors working in the vicinity

Traffic plan controls (e.g., detour, markers, and signs) will be positioned prior to implementing detours. All excavations and trenches will be backfilled, surrounded with fencing panels, or covered with trench plates at the end of each work shift. When using temporary trench backfill, the surface of the roadway will be brought to a smooth, even condition with minimal discontinuities of humps and depressions. All existing striping, pavement markings, and signing altered during construction will conform to and be "in kind" with existing controls.

Proposed routes for bulk carriers of contaminated soil or construction debris will be submitted for bulk carriers transferring material from each IR site. Modification of routes will be submitted to the CSO and ROICC, as necessary, prior to each specific movement.

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10.0 Risk Management Processes

The AHAs (Enclosure 1 of the SSHP) attempt to anticipate chemical, physical, and biological hazards and to prescribe controls.

Before initiating a work activity that presents hazards not identified in the initial AHAs and to address safety or health hazards derived from changed or unanticipated conditions, the PM and SSHO will complete a JSA in consultation with crew members using H&S Procedure No. HS045, *Job Safety Analysis* (Shaw, 2010) to facilitate field documentation.

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11.0 References

Shaw Environmental & Infrastructure, Inc., 2010, *Health and Safety Policies and Procedures Manual*.

SulTtech, 2008, *Final Feasibility Study for Parcel C, Hunters Point Shipyard, San Francisco, California,* prepared as part of a joint venture between Sullivan Consulting Group and Tetra Tech Environmental Management, Inc., July 31.

U.S. Army Corps of Engineers, 2008, *Safety and Health Requirements Manual, EM 385-1-1*, Washington, D.C., September 15.

U.S. Department of the Navy, 2010, *Final Record of Decision for Parcel C, Hunters Point Shipyard, San Francisco, California,* September 30.

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Figure

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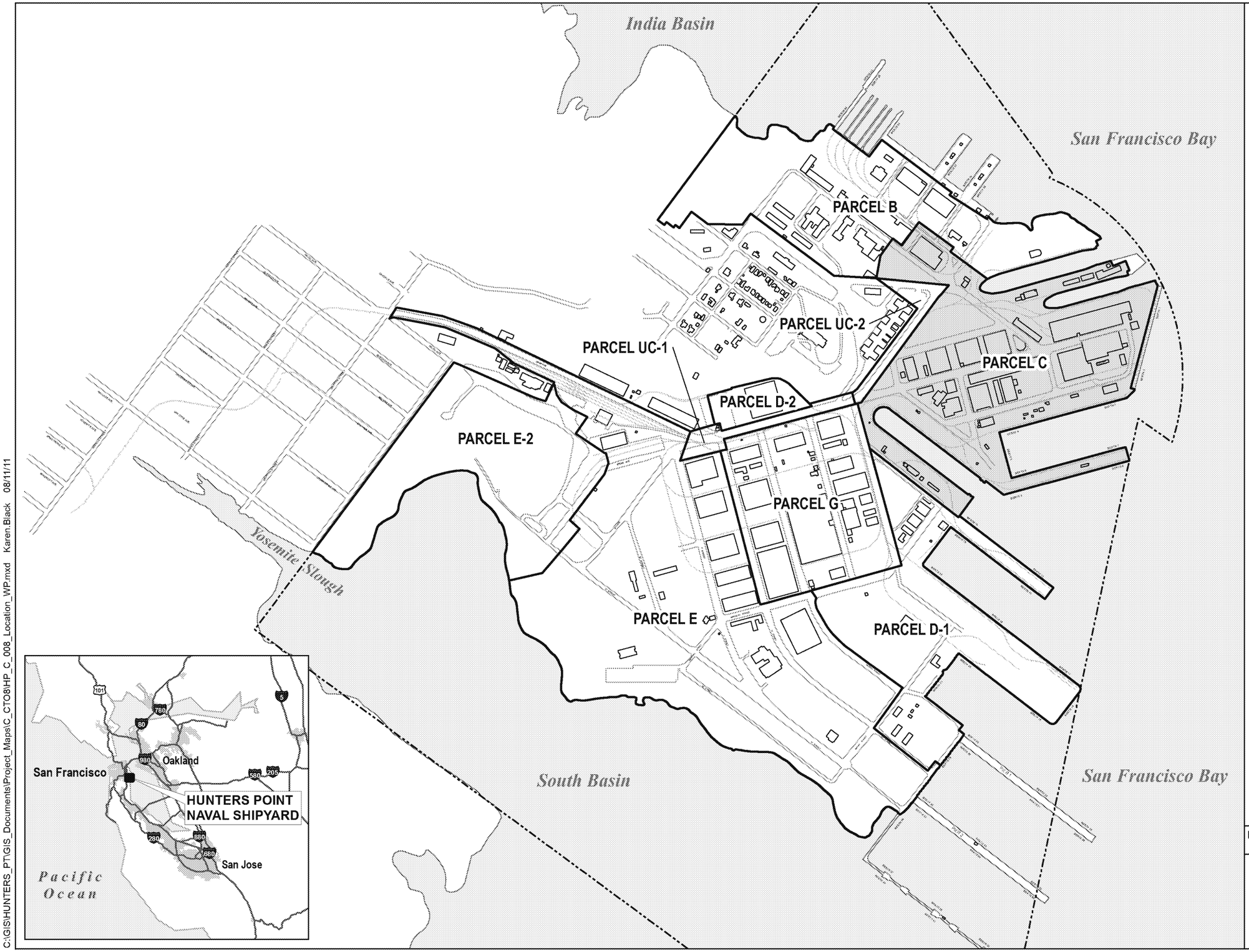

Legend

- Parcel C
- Parcel Boundary
- Parcel F Boundary
- Buildings

N

0 800 1,600 Feet

Shaw® Shaw Environmental, Inc.

Hunters Point Naval Shipyard, San Francisco, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 1
HUNTERS POINT NAVAL SHIPYARD AND PARCEL C LOCATION MAP

PARCEL C REMEDIAL ACTION

C:\GIS\HUNTERS_PT\GIS_Documents\Project_Maps\C_CTO8\HP_C_008_Location_WP.mxd Karen.Black 08/11/11

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Attachment 1
Site Safety and Health Plan

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FINAL
SITE SAFETY AND HEALTH PLAN
Groundwater and Soil Vapor Characterization in Support of Parcel C Remedial Action
Remedial Units C1, C4, and C5, and Building 241 Area
Hunters Point Naval Shipyard, San Francisco, California

RADIOLOGICAL EMAC
Contract Number: N62473-10-D-0807
Contract Task Order: 0008

Document Control Number: SHAW-0807-0008-0126

February 2012

Submitted to:

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February 2012

Prepared by: _____ Date: February 13, 2012
Fredrick J. Mlakar CIH, CSP
Shaw Health and Safety Manager
Shaw Environmental & Infrastructure, Inc.

Approved by: _____ Date: February 13, 2012
John Baur
Project Manager
Shaw Environmental & Infrastructure, Inc.

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Acronyms and Abbreviations

mg/m^3	milligram per cubic meter
ACGIH	American Conference of Governmental Industrial Hygienists
AHA	activity hazard analysis
APP	Accident Prevention Plan
CIH	Certified Industrial Hygienist
CFR	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
CRZ	contamination-reduction zone
DHC	*Dehalococcoides sp*
EMS	emergency medical services
EZ	exclusion zone
f/b	flash/bang
HAZWOPER	Hazardous Waste Operations and Emergency Response
HPNS	Hunters Point Naval Shipyard
mph	mile per hour
MSDS	material safety data sheet
OSHA	Occupational Safety and Health Administration
PID	photoionization detector
PM	Project Manager
PPE	personal protective equipment
RU	Remedial Unit
Shaw	Shaw Environmental & Infrastructure, Inc.
SSHP	Site Safety and Health Plan
SS	Site Superintendent
SSHO	Site Safety and Health Officer
SZ	support zone
TLV	threshold Limit value

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1.0 Introduction

This Site Safety and Health Plan (SSHP) is an attachment to the Accident Prevention Plan (APP) for the environmental remedial actions involving Remedial Units (RU) C1, C4, and C5, and the Building 241 Area of Hunters Point Naval Shipyard (HPNS), San Francisco California. Shaw Environmental & Infrastructure, Inc. (herein referred to as Shaw) has prepared these documents to protect workers and the public from potential hazards associated with work site equipment and conditions. In combination with the *Health and Safety Policies and Procedures Manual* (Shaw, 2010), they serve as the *Code of Safe Work Practices*. All of these documents are required to be on site and available for immediate reference.

The procedures and guidelines contained herein are based on the best available information at the time of the plan's preparation. The SSHP must remain flexible because of the nature of the work. Changes to the SSHP, if required, must be approved by the Site Safety and Health Officer (SSHO), Health and Safety Manager, Project Manager (PM), or Site Superintendent (SS).

The project location, description, history, and scope of work are presented in Section 2.0 of the APP.

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2.0 Key Personnel

The PM, SS, SSHO, and Project Certified Industrial Hygienist (CIH) share responsibilities for formulating and enforcing health and safety requirements and implementing the SSHP. This section outlines the responsibilities of each of these key personnel as well as on-site personnel and subcontractors.

2.1 Project Manager

The PM maintains overall responsibility for the project and ensures that the requirements of the contract are attained in a manner consistent with the SSHP requirements. The PM will coordinate with the SS and the SSHO to ensure that the work is completed in a manner consistent with the SSHP. The PM will conduct a periodic health and safety audit of the project. The Task Manager will provide local support to the PM on site-specific issues.

2.2 Site Superintendent

The SS is responsible for Site Emergency Response and field implementation of the SSHP and Contingency Plan, and will act as the SSHO in his/her absence. The SS is also responsible for establishing emergency communication with potential emergency response organizations. The SS reports to the PM.

2.3 Site Safety and Health Officer

The SSHO is authorized to administer the SSHP. The SSHO's primary operational responsibilities include personal and environmental monitoring, selection and care of personal protective equipment (PPE), assignment of protection levels, review of work permits, and observation of work activities. The SSHO is authorized to stop work when an imminent health or safety risk exists. The SSHO will review the essential safety requirements with all on-site personnel and will facilitate the daily safety meetings. The SSHO reports to the Project CIH.

Specific SSHO responsibilities include the following:

- Establishing emergency communications with all potential emergency response organizations and verifying telephone numbers for all emergency responders prior to the start of on-site work
- Monitoring workers for signs of stress, such as cold exposure, heat stress, and fatigue
- Re-evaluating site conditions on an on-going basis and coordinating protective measures including engineering controls, work practices, and PPE
- Assisting the SS in the preparation, presentation, and documentation of daily safety meetings

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- Conducting and preparing reports of daily safety inspections of work processes, site conditions, and equipment conditions, and submitting reports to the SS; discussing any necessary corrective actions with the SS and reviewing new procedures
- Initiating revisions of the SSHP as necessary for new tasks or modifications of existing operations and submitting revisions to the Project CIH for approval
- Performing air monitoring as required by the SSHP
- Assisting the PM and SS in incident investigations
- Preparing permits for special operations (e.g., hot work, confined spaces, and line breaking)
- Maintaining site safety records
- Conducting weekly inspections of all fire extinguishers, supplied air respirators, first-aid kits, and eye washes/emergency showers
- Informing subcontractors of the elements of the SSHP/contractor pre-activity hazard checklist
- Coordinating the preparation of activity hazard analyses (AHAs) with the SS, team leader, and work crew

2.4 Project Certified Industrial Hygienist

The Health and Safety Manager (HSM) and Project CIH are responsible for reviewing the SSHP and ensuring that the SSHP is complete and accurate. The HSM/Project CIH will provide technical and administrative support and will be available for consultation when required. If necessary, the HSM/Project CIH will direct modifications to specific aspects of the SSHP to adjust for on-site changes that affect safety. The SSHO and SS will coordinate with the HSM/Project CIH on necessary modifications to the SSHP. The HSM/Project CIH may make periodic site visits to determine compliance.

2.5 On-Site Worker Safety Responsibilities

On-site workers are responsible for their own safety as well as the safety of others in their areas of responsibility. All on-site personnel will use equipment in a safe and responsible manner as directed by the SS. Site personnel concerned with any aspect of health and safety will bring it to the attention of the SS/SSHO. If not satisfied, they should contact the Project CIH. All project personnel have the authority to stop work if, in their judgment, serious injury could result from continued activity. The SS and the SSHO will be notified immediately if work stoppage becomes necessary. To protect the health and safety of all personnel, employees that knowingly disregard safety policies/procedures may be subject to disciplinary actions. Specific requirements include the following:

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- Reading the SSHP and any amendments prior to the start of on-site work
- Providing documentation of medical surveillance and training to the SS/SSHO prior to the start of work
- Attending the pre-entry briefing prior to beginning on-site work as well as other scheduled safety meetings
- Bringing forth any questions or concerns regarding the content of the SSHP to the SS/SSHO prior to the start of work
- Reporting all potentially dangerous situations, incidents, injuries, and illnesses, regardless of their severity, to the SS/SSHO
- Complying with the requirements of this SSHP and the requests of the SS/SSHO

2.6 Subcontractor Safety Responsibilities

This section outlines general requirements for subcontractors including adoption of the Shaw SSHP, correction of safety violations, and other general requirements.

2.6.1 Correction of Safety Violations

Every employer on the project site has an obligation to prevent or correct hazards and to protect all employees from exposure to such conditions if they exist. To ensure these obligations are being met, subcontractors will be subject to periodic inspections by Shaw. The subcontractor will be notified in writing if a safety violation is observed. The subcontractor shall have these violations corrected within the period noted and shall sign and enter the date on which the item was corrected, and return the signed inspection reports so items can be rechecked. Failure to correct the violations and to return the signed inspection reports may result in termination of contract.

2.6.2 General Safety Requirements

Additionally, the subcontractor is responsible for ensuring the following:

- Designating a safety representative to work with the Shaw SSHO
- Properly preparing or participating in the preparation of AHAs to address hazards associated with their scopes of work
- Ensuring, via daily inspections, that all work conditions, practices, and equipment are free of hazards
- Providing the SSHO with copies of material safety data sheets (MSDSs) for all hazardous materials brought on site
- Providing all the required PPE for their employees

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- Participating in the daily safety meeting
- Reporting immediately all safety incidents, including near misses, first aid, medical, equipment, vehicle, property, and environmental to the Shaw SSHO

2.7 Key Safety Personnel - Phone Numbers

The following individuals share responsibility for health and safety at the site.

Project Manager:	John Baur 925.288.2019 (office) 925.382.3051 (mobile)
Site Superintendent:	Jim Click 415.822.2053 (office) 303.345.8998 (mobile)
Site Safety and Health Officer:	Mark Vennemeyer 925.288.2383 (office) 925.383.6502 (mobile)
HSM/Project Certified Industrial Hygienist:	Fred Mlakar 949.660.5413 (office) 949.981.1450 (mobile)
Alternate Site Safety and Health Officer	Mark Egan 415.822.1223 (office) 925.321.6169 (mobile)

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3.0 Hazard Analysis

The assessment of chemical and physical hazards in this section is based on the information provided from project documents and site history.

3.1 Task-Specific Activity Hazard Analyses

Enclosure 1 contains an AHA for each major field activity listed as follows:

- Vehicle operations
- Site preparation
- Site surveys, geophysical, land
- Excavation and backfilling
- Dump truck operations
- Hand auger operations
- Hollow-stem auger drilling operations, horizontal and vertical installation
- Direct-push technology
- Installation, operation, and maintenance of soil vapor extraction system
- Compressed gas handling and storage
- Groundwater sampling
- Waste management
- Waste soil, asphalt, and concrete segregation, stockpiling and transport
- Concrete coring
- Air-rotary casing hammer drilling

The information in the following sections supplements the AHAs. In addition, unanticipated hazards that could expose workers to those hazards due to changed conditions or new information will be addressed prior to starting or continuing work. A new or revised AHA will be prepared using U.S. Army Corps of Engineers *Safety and Health Requirements Manual, EM 385-1-1* (U.S. Army Corps of Engineers, 2008), or an existing AHA will be supplemented using Shaw's Health and Safety Policy and Procedure No. HS045, *Job Safety Analysis* (Shaw, 2010).

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3.2 Chemical Hazards

This section discusses potential hazards of site contaminants and process chemicals.

3.2.1 Site Contaminants

Based on analyses of soil samples, volatile organic compounds, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and metals have been detected. Tables 1 and 2 list maximum concentrations, exposure limits, and health hazards for non-volatile contaminants and volatile contaminants, respectively. The contaminant concentrations in groundwater and soil, together with the nature of operations, are such that the potential of hazardous exposures to site workers is low.

Equivalent dust calculations based on maximum contaminant concentrations, and action levels enforced by the Occupational Safety and Health Administration (OSHA) arsenic standard Title 29 Code of Federal Regulations (CFR) 1910.1018, the OSHA chromium VI standard Title 29 CFR 1910.1026, and the lead standard Title 29 CFR 1910.1025/1926.62, indicated that 8-hour time weighted average dust concentrations would have to exceed 25, 9.6, and 10.7 milligram per cubic meter (mg/m^3), respectively, to exceed regulatory action levels. Historical monitoring under similar anticipated conditions shows that these concentrations are practically impossible to be attained.

Concrete coring will be required in Buildings 231 and 272 for the groundwater characterization and in Buildings 211, 231, 253, and 272 for soil vapor characterization. The potential for crystalline silica dust inhalation exposure from the coring operations will be effectively eliminated by using a saw that rotates at a relatively slow speed and by applying water that cools the coring bit, reduces friction, and flushes the drill cuttings. The water also entrains the drill cutting particles to prevent inhalation of coring particulates.

Symptoms of chronic silica exposure include cough, dyspnea (breathing difficulty), and wheezing; decreased pulmonary function; progressive respiratory symptoms (silicosis); and irritation to eyes. It is a potential occupational carcinogen. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends limiting worker exposures to an 8-hour time-weighted average threshold limit value (TLV) of 0.025 mg/m^3 of airborne silica dust (ACGIH, 2010).

The substrates selected for the proposed remedial activities include emulsified vegetable oil, EOS® 598B42, and WILCLEAR sodium lactate to achieve reducing conditions favorable to biodegradation. Although these substrates are not considered hazardous, their MSDSs will be maintained on site along with a copy of Shaw Procedure No. HS060, *Hazard Communication Procedure* (Shaw, 2010).

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3.2.2 *Ionizing Radiation*

Historically, many HPNS areas received shipyard and repair wastes including discarded radium dials and numbers and pointers of watches and compasses, markers, lines, and spots that glowed in the dark. Those radium sources were deposited at the industrial landfill and bay fill areas after World War II. Some wastes either were crushed or decomposed, allowing radium to escape into the environment. Another potential radiation source is sandblast grit that may have been used in the decontamination of ships or other equipment and may have contained elevated levels of radiation.

Radiologically impacted site designations exist for the inside of Buildings 211, 253, and 272. The areas are under the direction of the HPNS Basewide Radiological Contractor. To safely control ongoing work in designated radiologically impacted areas, Shaw employees and subcontractors must follow the directions laid out in the Radiological Work Instruction located in Appendix E of the Work Plan.

Table 1
Nonvolatile Site Contaminants

Chemical	Max (mg/kg)	TLV (mg/m^3)	Exposure Routes and Symptoms
Arsenic	200	TWA=0.01	Routes of exposure: inhalation, skin absorption, skin and/or eye contact, and ingestion Symptoms: ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, and hyperpigmentation of skin (potential occupational carcinogen)
Chromium (VI)	260	TWA=0.005	Routes of exposure: inhalation, ingestion, and skin and/or eye contact Symptoms: irritation of respiratory system, nasal septum perforation, liver and kidney damage, leukocytosis (increased blood leukocytes), leukopenia (reduced blood leukocytes), eosinophilia, eye injury, conjunctivitis, skin ulcer, sensitization dermatitis (potential occupational carcinogen)
Lead	2,810	TWA=0.05	Routes of exposure: inhalation and ingestion Symptoms: lassitude (weakness, exhaustion), insomnia, facial pallor, anorexia, weight loss, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paralysis of wrists and ankles, encephalopathy, kidney disease, eye irritation, and hypertension
Manganese	35,000	TWA=0.2	Routes of exposure: inhalation ingestion Symptoms: manganism, asthenia, insomnia, mental confusion, metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever, low-back pain, vomiting, malaise (vague feeling of discomfort), lassitude (weakness, exhaustion), and kidney damage

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Table 1 (continued)
Nonvolatile Site Contaminants

Chemical	Max (mg/kg)	TLV (mg/m^3)	Exposure Routes and Symptoms
Mercury	124	TWA=0.025	Routes of exposure: inhalation, ingestion, and skin absorption Symptoms: eyes and skin irritation, cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis, tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion), stomatitis, salivation, gastrointestinal disturbance, anorexia, weight loss, and proteinuria
Zinc	36,000	TWA=2.0	Routes of exposure: inhalation and ingestion Symptoms: metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion), metallic taste, headache, blurred vision, low-back pain, vomiting, malaise (vague feeling of discomfort), chest tightness, and dyspnea (breathing difficulty), rales, and decreased pulmonary function
Polycyclic aromatic hydrocarbons	81	TWA=0.2 (As coal tar pitch volatiles)	Routes of exposure: inhalation, ingestion, and skin contact Symptoms: PAHs target the respiratory system, skin, bladder, and kidneys suspected lung, kidney, and skin carcinogens. Symptoms of what?? include dermatitis and bronchitis. Exposure limits have not been established for many specific PAHs in this large group of compounds.
Poly-chlorinated biphenyls	298	TWA=0.5	Routes of exposure: inhalation, ingestion, and skin contact Symptoms: eye irritation, chloracne, liver damage, and reproductive effects (potential occupational carcinogen)

Notes:

Max	*maximum*
mg/m^3	*milligrams per cubic meter*
mg/kg	*milligram per kilogram*
NE	*none established*
PAH	*polycyclic aromatic hydrocarbon*
STEL	*short-term exposure limit (15-minute TWA)*
TLV	*threshold limit value (ACGIH®, 2010)*
TWA	*time-weighted average (8-hour workday/40-hour workweek*

Table 2
Volatile Site Contaminants

Chemical	Max (ppm)	TLV (ppm)	Exposure Routes and Symptoms
Benzene	9.0	TWA = 0.5 STEL = 2.5	Exposure occurs via inhalation, ingestion, and skin/eye contact Symptoms: carcinogenic (leukemia) - Irritation to eyes/skin/nose, dizziness, headache, nausea, staggered gait, anorexia, lassitude, dermatitis, and bone marrow depression
1,4 Dichloro-benzene	34.2	TWA =10	Exposure occurs via inhalation, ingestion, and skin/eye contact Symptoms: eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver and kidney injury (potential occupational carcinogen)
Naphthalene	5.5	TWA=10 STEL=15	Exposure occurs via inhalation, ingestion, and skin/eye contact Symptoms: eye irritation; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, and corneal damage
Tetrachloro-ethene	130.0	TWA=25 STEL=100	Exposure occurs via inhalation, ingestion, and skin/eye contact Symptoms: irritation to eyes, skin, nose, throat, and respiratory system; nausea; flush face and neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); and liver damage (potential occupational carcinogen)
Trichloroethene	120.0	TWA = 10 STEL = 25	Exposure occurs via inhalation, ingestion, and skin/eye contact Symptoms: A suspected human carcinogen. Eye and skin irritation, headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting, dermatitis, cardiac arrhythmias, and liver injury
Vinyl chloride	1.5	TWA=1	Exposure occurs via inhalation and skin/eye contact Symptoms: lassitude (weakness, exhaustion), abdominal pain, gastrointestinal bleeding, enlarged liver, pallor or cyanosis of extremities, liquid frostbite (potential occupational carcinogen), lung cancer, and liver damage

Notes:

Max	*maximum*
NE	*none established*
ppm	*parts per million*
STEL	*short-term exposure limit (15-minute TWA)*
TLV	*threshold limit value (ACGIH®, 2010)*
TWA	*time-weighted average (8-hour workday/40-hour work week)*

3.3 Bioaugmentation

Although many microorganisms participate in the in situ anaerobic biodegradation process, only one microorganism, *Dehalococcoides sp* (DHC), has been shown to biologically degrade trichloroethene to nontoxic ethane. DHC is a naturally occurring organism that is present at

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many, but not all sites, where chlorinated ethenes have been discharged. DHC has reportedly been detected in the groundwater at all sites evaluated where ethane, the nontoxic product of chlorinated ethylene degradation, has been detected. The presence of DHC is considered essential for successful in situ anaerobic biodegradation. During baseline sampling of the wells, the Shaw field team will sample for the presence of DHC at RU-C5, RU-C1, and RU-C4.

To ensure a sufficient population of DHC is present in the treatment area so that complete dechlorination may be achieved, a proven dechlorinating microbial consortium (Shaw's proprietary SDC-9™) may be distributed with the organic substrate during the injection process. SDC-9™ is a naturally occurring DHC that is indigenous to California.

Although DHC is not hazardous, its MSDSs will be maintained on site along with a copy of Shaw Procedure No. HS060, *Hazard Communication Procedure* (Shaw, 2010).

3.4 Physical Hazards

In addition to the task-specific AHAs presented in Enclosure 1, the general safe work practices presented in this section will be followed. Work areas will be inspected by the crew leaders, SS, and SSHO. Identified hazards will be corrected in a timely manner.

3.5 Utility Clearance

Utility clearance will be performed by using geophysical methods at the planned boring locations. Hand auguring to 5 feet below ground surface will further verify the absence of utilities at each boring location. Suspected underground utilities, conduits, and structures will be marked with color-coded paint according to standards established by the American Public Works Association.

Prior to bringing drilling equipment on site, a utility survey and site layout plan of all overhead electrical hazards, potential ground hazards, and underground hazards will be prepared as required by Section 18.H of the *Safety and Health Requirements Manual, EM 385-1-1* (U.S. Army Corps of Engineers, 2008).

The following required overhead clearances from power lines will be maintained:

Nominal System Voltage	Minimum Required Clearance
up to 50 kV	10 feet (3 m)
51–200 kV	15 feet (4.6 m)
201–350 kV	20 feet (6 m)
351–500 kV	25 feet (7.6 m)

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Nominal System Voltage	Minimum Required Clearance
501–650 kV	30 feet (9.1 m)
651–800kV	35 feet (10.7 m)
801–950 kV	40 feet (12.2 m)
951–1100 kV	45 feet (13.7 m)

Notes:

kV *kilovolt*

m *meter*

3.6 Environmental Hazards

Environmental factors such as weather, wild animals, insects, and irritant plants may pose a hazard when performing outdoor tasks. The SSHO and SS will take necessary actions to alleviate these hazards should they arise.

3.6.1 Heat Stress

If employees are performing moderate to heavy physical work during construction/remediation operations in standard permeable cotton or synthetic work clothing, monitoring of environmental heat stress parameters is advisable when the ambient air temperature exceeds 90 degrees Fahrenheit and any time discomfort due to heat stress is either noticed or reported. If employees are wearing impermeable protective clothing, physiological monitoring is advisable beginning at 70 degrees Fahrenheit and any time discomfort due to heat stress is either noticed or reported. Heat stress monitoring methods as well as signs, symptoms, treatment, and prevention are presented in Shaw's *Heat Stress Prevention Procedure* (HS400), which can be found in Enclosure 2.

3.6.2 Flying Insects

Flying insects such as mosquitoes, wasps, hornets, and bees may be encountered during site activities. Workers will observe the guidelines in Table 3.

Table 3
Flying Insect Guidelines

Organism	Description	Habitat	Problem	Severity	Protection
Hornet	1–inch long with some body hair. Abdomen is mostly black.	Round, paper-like nest hanging from trees, shrubs, or under eaves of buildings	One nest may contain up to 100,000 hornets that will attack in force at the slightest provocation.	Severe pain, allergic reactions similar to bees	Do not come near or disturb nest. If a hornet investigates you, do not move.

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Table 3 (continued)
Flying Insect Guidelines

Organism	Description	Habitat	Problem	Severity	Protection
Mosquito	Small, dark, fragile body with transparent wings; from 1/8– to ¼–inch long.	Where water is available for breeding	Bites and sucks blood. Itching and swelling result.	Can transmit encephalitis and other diseases. Scratching causes secondary infections.	Use plenty of insect repellant and wear gloves.
Wasp	Very thin waist. Color can be black, yellow, or orange with stripes.	Underground nest. Paper-like honeycomb nest in abandoned buildings, hollow trees, etc.	Stings. Some species will attack if you get too close to the nest.	Severe pain, allergic reactions similar to bees. Can be fatal.	Avoid nest. Do not swat at them.
Bee	Generally have yellow and black stripes and two pair of wings.	Hollow logs, underground nest, old buildings	Stings when annoyed. Leaves venom sac in victim.	If person is allergic, nausea, shock, and constriction of the airway can result. Death may result.	Be careful and watch where you walk. Cover exposed skin. Avoid areas where bees are swarming. Avoid wearing sweet fragrances and bright clothing. Move slowly or stand still when bees are swarming about you.

3.6.3 Spiders

The project may require entering areas such as vaults, well casings, or other dark, rarely occupied structures that are entered infrequently. These areas seem to provide the perfect home for creatures such as spiders that prefer to avoid contact with humans. Workers should remember the following facts and precautions to avoid contact and prevent bites:

- Spiders are primarily nocturnal and retreat to dark areas.
- Spiders avoid humans. However, they will bite when they are threatened or disturbed.
- Spiders can be venomous; however, they rarely bite humans. Even so, spiders that may bite can cause a painful injury and in rare cases, hospitalization or death.
- Two types of spiders that are poisonous and can pose a risk to humans are the black widow and brown recluse. For these reasons, it is best to try to avoid spiders in the work environment.
- When opening a well casing or vault, let it air out a few minutes and introduce lighting if possible.
- Use a broom or stick to sweep the area and remove webs prior to entering the area.

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- Before entering, scan corners and under ledges with a flashlight to make sure spiders have retreated. Avoid placing a hand over an area the spider may be hiding to prevent spider bites.
- Always wear gloves and use Tyvek® if necessary for extra protection.
- Eliminate or shield outdoor lights or indoor lights that attract flying insects, which is the spider's food source.
- Trim weeds around the building foundation, and remove debris to discourage insects and spiders from living next to a structure.
- Seal openings and install screens and door sweeps to prevent spiders from moving indoors.
- Use a vacuum to remove webs, spiders, and egg sacs.
- Using insecticide sprays is not recommended. These sprays contain chemicals that are also toxic to humans and, if used in a confined area, present a greater exposure hazard than the spider. Additionally, insecticides can cross-contaminate samples, treatment systems and in some cases, actually cause contamination to be spread into the well and the groundwater source being monitored.

3.6.4 Lightning

The following procedures will be used to protect site personnel from lightning-related injuries.

3.6.4.1 Detection of Lightning

The SS proactively monitors conditions that may produce thunderstorms and lightning. A daily and weekly weather forecast will be tracked and communicated to site personnel. When there are signs of impending storms (i.e., increasing wind, darkening skies, or lightening appears), local weather monitoring will be increased. The National Weather Service (www.nws.noaa.gov) should be consulted frequently. Personnel will be notified when thunderstorms may affect the site.

The "flash/bang" (f/b) technique of measuring the distance to lightning will be reviewed with all personnel. The f/b technique is defined as for each 5 seconds from the time of observing the lightning flash to hearing the associated thunder, the lightning is 1 mile away.

3.6.4.2 Suspension/Resumption of Activities

All outside activities will be suspended when a lightning flash is immediately in the area or an f/b of 20 seconds (4 miles away) is noted. Personnel may continue indoor work activities. Outdoor activities will resume when 30 minutes have passed since the last observable f/b of 20 seconds or greater.

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3.6.4.3 Lightning Protection

When notification is given, all outside work activities will stop, and personnel will gather in the support zone (SZ) for a head count and further instructions. Indoor work will continue, except for the use of electrical equipment, telephones, and computers. When a safe location is not present and personnel are caught by a sudden lightning event, employees should seek the lowest possible area away from large objects that might attract lightning or fall over (e.g., trees or utility poles). Employees should assume a crouching position with their head lowered and hands over their ears. **Avoid water; high ground; heavy equipment; and tall, isolated objects.**

3.6.4.4 First Aid

An employee that is struck by lightning needs immediate assistance, and 911 should be called. If struck, a person receives a severe electrical shock and may be burned, but the body will not carry an electrical charge. Personnel certified in first-aid/cardiopulmonary resuscitation (CPR) should inspect the injured employee for shock and burns around fingers, toes, buckles, and jewelry. Workers should stay with the injured employee until medical help arrives.

3.6.5 Noise

Exposure to excessive noise can cause temporary impairment of hearing. Prolonged and repeated exposure can cause permanent damage to hearing. The risk and severity of hearing loss increase with the intensity and duration of exposure to noise. In addition to damaging hearing, noise can impair voice communication, thereby increasing the risk of accidents on site.

Hearing protection is required for workers operating or working near heavy equipment, where the noise level is high enough to impair normal speech, or greater than 85 decibels as measured with a Type 2 sound level meter set on the A-weighting scale. When in doubt about noise levels, hearing protection will be used.

A supply of earplugs will be maintained on site. All personnel will wear hearing protection with a noise-reduction rating of at least 20 when noise levels exceed 85 decibels.

Whenever possible, equipment that does not generate excessive noise levels will be selected for this project. If the use of noisy equipment is unavoidable, barriers or increased distance will be used wherever possible to minimize worker exposure to noise.

3.7 Vehicle Safety

Seat belts will be used at all times when traveling in vehicles. All project personnel are expected to incorporate safe actions and preparations to avoid vehicle accidents and personal injury during work and off-duty hours. Breaks should be planned into lengthy job mobilizations and demobilizations, including rotation of drivers at regular intervals. If parking areas are busy or crowded and more than one worker is traveling in the same vehicle, one worker should remain

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outside the vehicle as it leaves the parking space to assist the driver with traffic observation. Vehicles traveling before dawn and at dusk in rural or wooded areas should be prepared to brake for wildlife, such as deer, crossing roadways.

All project personnel arriving at work areas should park vehicles away from delivery, heavy equipment, and vehicle loading/unloading locations to prevent damage to parked vehicles by various deliveries. Heavy equipment operators should inspect areas and request vehicles to be moved or use spotters, if necessary, to maneuver equipment in tight areas. Employees who observe near-misses or potential risks to parked or moving vehicles must report these incidents to the SS or SSHO immediately.

All project personnel are expected to use the vehicle inspection form and check/test the safety systems on the project vehicle on a weekly basis, including the brakes, mirrors, seat belts, tires, potential leakage from the undercarriage, lights, and turn signals. Vehicles with safety deficiencies must be reported immediately and not driven until properly repaired. Vehicles used to run errands from different project sites should have telephone numbers of the job site in the vehicle in case calls for assistance are required.

Because of the different ways alcohol can affect behavior, even in very small amounts, the best and safest course is not to drink before driving. A driver with a blood alcohol concentration over 0.04 percent will be considered to be under the influence and subject to disciplinary action. Personnel involved in motor vehicle incidents are subject to drug and alcohol testing.

Weather conditions can have a profound effect on driving. On slippery roads, employees should drive slowly, stop and turn with care, and keep several car lengths from other vehicles. At speeds in excess of 35 miles per hour (mph), the chances of hydroplaning increase with speed. In general, keep a distance of one car length for every 10 mph to prevent striking the car ahead.

Vehicles will be operated in accordance with the following requirements:

- Seat-belt use will be mandatory for all passengers.
- Personnel may not ride in the back of cargo vehicles.
- The driver must perform a 360-degree walk around the entire assigned vehicle prior to driving.
- A ground guide will be used to back up any vehicle.
- Vehicle speed will be limited to the posted speed limits for developed roadways, 25 mph maximum on dirt roads, and 10 mph maximum off-road (based on conditions).
- Vehicles will be driven in four-wheel low and low gear when driving on dirt roads or during off-road driving where steep grades dictate.

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- All operators must possess a valid driver's license.
- Fuel or gasoline will not be transported inside the passenger compartment.
- No vehicle will be left running when unattended.
- Parking brakes will be used when vehicles are parked.

In the event of a vehicle incident, the appropriate SS should be notified immediately, and all required reports should be completed.

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4.0 Work and Support Areas

Work zones will be established to protect both site workers and the public. Each work area will be clearly identified using signs, delineators, caution tape, or physical barriers.

4.1 Exclusion Zone

The exclusion zone (EZ) is the area that presents the greatest potential for worker exposure. Personnel entering the area must wear the mandated level of protection for that area. Cones or other appropriate means of delineation will identify each EZ.

4.2 Contamination - Reduction Zone

If modified Level D or Level C protection becomes necessary, the contamination reduction zone (CRZ) or transition zone will be established between the EZ and SZ. In this area, personnel will begin the sequential decontamination process required to exit the EZ. To prevent off-site migration of contamination and for personnel accountability, all personnel will enter and exit the EZ through the CRZ. The CRZ for this project will be the access/egress routes to/from the EZ and the personnel and equipment decontamination stations.

4.3 Support Zone

The SZ serves as a clean, control area. Operational support facilities are located within the SZ. Normal work clothing and support equipment are appropriate in this zone. Contaminated equipment or clothing will not be allowed in the SZ. The support facilities should be located upwind of site activities. A clearly marked, controlled access point from the SZ into the CRZ and EZ will be designated. To ensure that proper safety protocols are followed, access points will be monitored closely by the SSHO and the SS. The SZ will consist of the crew trailer, office trailers, and the parking and visitor access ways to the project site.

4.4 Access Controls

The SSHO and SS will establish the physical boundaries of each zone and instruct all workers and visitors on the limits of the restricted areas. No one will be allowed to enter the restricted area without the required PPE for that area. The SS will ensure compliance with all restricted area entry and exit procedures. The SS will also designate a decontamination point for personnel to exit the contaminated area and to enter the clean area, which is where personnel may eat and rest.

All site personnel and/or visitors entering and exiting the EZ or the CRZ will be required to log-in/log-out from the site on a daily basis. The log will be maintained at the entrance.

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4.5 Hazard Briefing

No person will be allowed on the site during site operations without first participating in a hazard briefing. In general, the briefing will consist of a review of the SSHP and the tailgate safety meeting. All persons on the site, including visitors, must sign the SSHP Acknowledgment Sheet and Tailgate Safety Meeting Form (Enclosure 3). Tailgate safety meetings will be held daily before site activities begin.

4.6 Visitor Access

The following section describes how to handle visitors to the site.

4.6.1 Approach

If unannounced visitors arrive on site, Shaw employees should approach them, introduce themselves, and respectfully ask the visitors to identify themselves and state their business. An effort should be made to distinguish between Shaw workers and subcontractors and people for whom Shaw is not responsible for enforcing health and safety rules on job sites, such as client representatives, agency representatives, and other visitors authorized by the client. For example, hardhats and safety glasses may be a requirement in the SZ or anywhere on the site for workers, but to enforce this requirement on all visitors may not be necessary. A respectful explanation of what areas to avoid may be all that is necessary.

4.6.2 Unauthorized Visitors

If visitors are unauthorized, Shaw employees should explain to the visitors that entry to the site is restricted because the site contains hazards. The site boundaries and any other relevant restrictions should be pointed out to the visitors.

4.6.3 Visitors Authorized to View the Site from the Support Zone

If visitors are authorized by the client to see the site from the SZ, Shaw employees should do the following:

- Review the tailgate safety meeting form with them and ask them to sign it
- Provide the visitors with hardhats, safety glasses, and safety vests, if applicable
- Prohibit entry to the EZ

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4.6.4 Visitors Authorized to Enter the Exclusion Zone During Ongoing Work Activities

If the visitors are authorized by the client to enter the EZ, Shaw employees should do the following:

- Verify that they have current Hazardous Waste Operations and Emergency Response (HAZWOPER) training
- Verify that they had a current physical exam authorizing work on hazardous waste sites
- Review the SSHP and the tailgate safety meeting form and have the visitors sign the acknowledgement forms of all documents
- Provide the PPE required for the site
- Escort the visitor while in the EZ

4.6.5 Refusal

If visitors refuse to comply with any one of the requirements listed in the previous sections, and the **client authorizes** the visitor to enter the EZ anyway, Shaw will **shut down** any potentially hazardous equipment and take all practicable steps to eliminate other hazards and exposures. The event will be thoroughly documented.

Visitors who refuse to comply and are not authorized by the client should be asked to leave. Contact the local police if problems occur with visitors who refuse to leave.

4.7 General

The following items are requirements to protect the health and safety of workers and will be discussed in the safety briefing prior to initiating work on the site:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of contamination is prohibited in the EZ and CRZs.
- Hands and face must be washed upon leaving the EZ and before eating, drinking, chewing gum or tobacco, smoking, or other activities that may result in ingestion of contamination.
- A buddy system will be used. Hand signals will be established to maintain communication.
- During site operations, each worker will consider himself or herself as a safety backup to his/her partner. Off-site personnel will provide emergency assistance. All personnel will be aware of dangerous situations that may develop.

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- Visual contact will be maintained between buddies on site when performing hazardous duties.
- Personnel will not be permitted to enter hazardous areas of the site without the proper safety equipment, training, and medical surveillance certification.
- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established by the SSHO or the SS, will be immediately dismissed from the site.
- Proper decontamination procedures must be followed before leaving the site.
- All employees and visitors must sign in and out of the site.

4.8 Emergency Entry and Exit

People who will enter the site on an emergency basis will be briefed by the SS regarding the hazards. All hazardous activities will cease in the event of an emergency, and any sources of emissions will be controlled, if possible. Section 10.0, "Emergency Action Plan," provides more information for emergency procedures.

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5.0 Protective Equipment

The primary objective of the PPE program is to ensure employee protection and to prevent employee exposure to site contaminants during site operations. Where engineering controls and administrative controls are not feasible to limit potentially hazardous exposure, PPE will be used. All site personnel must be trained in the proper use of their assigned PPE.

The SS will be responsible for monitoring all aspects of the PPE program. These aspects include donning and doffing, temperature-related stress monitoring, inspection, and decontamination (Section 6.0). The SS, in consultation with the SSHO and the Project CIH, will direct changes in PPE based on changing conditions. This SSHP and any amendments (Enclosure 4) will serve as written certification that the workplace was evaluated concerning PPE requirements.

5.1 Anticipated Protection Levels

The initial level of PPE for all site activities is Level D. Modified Level D is described in Section 5.2 in case PPE upgrade becomes necessary. Air-purifying respiratory protection is not approved for protection against chlorinated hydrocarbon vapors, which have poor warning properties. Therefore, a Level C ensemble is not prescribed. Mechanical dilution ventilation will be used to control vapors if needed. Engineering controls such as hydration and fixatives will also be used to control airborne dust.

5.2 Protection Level Descriptions

This section lists the minimum requirements for the anticipated protection levels. Modifications to these requirements are noted in Section 5.1.

5.2.1 Level D

Level D PPE consists of the following:

- Safety glasses with side shields
- Hardhat
- Leather steel-toed work boots
- Sleeved shirts and long pants
- Abrasion-resistant work gloves when handling material
- High-visibility traffic vest (in areas of vehicle traffic and/or mobile equipment)
- Hearing protection where noise inhibits normal speech

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5.2.2 Modified Level D

Modified Level D PPE consists of the following:

- Safety glasses with side shields
- Hardhat
- Sleeved shirts and long pants
- Face shield (when projectiles or splashes pose a hazard)
- Nitrile or polyvinyl chloride gloves
- Tyvek® or equivalent coveralls
- Hearing protection where noise inhibits normal speech
- Steel-toed polyvinyl chloride, nitrile, or rubber boots or disposable booties over leather steel-toed work boots

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6.0 Decontamination Procedures

This section describes the procedures necessary to ensure that personnel and equipment are free from contamination when they leave contaminated sections of the work site.

6.1 Personnel Decontamination

If workers come into contact with materials in the EZ, decontamination procedures will limit personal exposure and the spread of contamination to clean areas of the site. This sequence describes the general decontamination procedures for Level D and Modified Level D PPE. The specific stages will vary depending on the site, the task, and the protection level. Dry decontamination methods may be used if approved by the SS and SSHO, who will confirm that the decontamination procedures are adequate.

Level D decontamination:

- Go to end of EZ
- Wipe or brush dust from boots
- Wash hands prior to eating, drinking, or smoking

Modified Level D decontamination:

- Go to end of EZ
- Wash outer boots and stage to let dry
- Remove and discard latex booties
- Remove outer gloves and discard
- Cross into CRZ
- Remove protective coverall
- Remove inner sample gloves and discard
- Wash face and hands prior to eating, drinking, or smoking

6.2 Equipment Decontamination

Equipment will be decontaminated before leaving the site. A visual inspection of the frame and tires of all vehicles and equipment leaving an EZ will be completed. In order for a vehicle or equipment to pass inspection, it must be in a broom-clean condition and free of loose dirt or sludge material on, for example, tailgates, axles, wheels, and buckets. A pressure washer will be on site so that any vehicles or equipment can be pressure–washed, if necessary.

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7.0 Air Monitoring

Air monitoring will be conducted to characterize personal exposures and fugitive emissions from site contaminants. Principal contaminants of concern are listed in Section 3.0 of this SSHP. Results of air monitoring will be used to choose the proper selection of protective clothing and equipment to protect on-site personnel and off-site receptors from exposure to unacceptable levels of site contaminants. The following sections describe air monitoring procedures and equipment.

7.1 Volatile Soil Contaminants

A photoionization detector (PID) will be used to screen for the presence of organic vapors emitted from contaminated soil. The PID is designed for trace vapor analysis in ambient air and is calibrated with a certified standard of isobutylene. The PID will be equipped with a 10.6-electron-volt lamp, which has been determined to be most responsive to the site contaminants.

The calibration will be checked twice each day (beginning and end of shift) in accordance with the manufacturer's instructions. A log will be kept detailing date, time, span gas, and name of person performing the calibration.

Maintenance of the PID consists of cleaning the lamp and ion chamber and replacing the lamp or other component parts or subassemblies.

Volatile soil contaminants with low permissible exposure limits such as vinyl chloride will be screened using a Dräger tube.

7.2 Nonvolatile Soil Contaminants

The personal data-logging real-time aerosol monitor or Mini-RAM will be used for real-time monitoring of airborne soil dust concentrations. The Mini-RAM is a high-sensitivity, photometric monitor whose light-scattering sensing configuration has been optimized for the measurement of the respirable fraction of airborne dust, smoke, fumes, and mists.

Real-time monitoring for dust will be performed during activities that have the potential for creating a dust hazard, such as clearing, excavation, loading and unloading trucks, and stockpiling. A Mini-RAM will be used to monitor for dust in the work area and on the downwind boundary of the site.

The Mini-RAM is calibrated and maintained by the Shaw Electronics Group in Findlay, Ohio. There is no practical procedure for field calibration of the Mini-RAM. Before each day's use, the

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zero will be checked against a filtered air sample according to the manufacturer's recommendations. A log detailing date, time, and name of person performing the check will be kept.

7.3 Silica Dust

The SSHO will visually monitor the concrete coring operation. If any amount of visible dust reaches workers' breathing zones, dust suppression efforts will be increased. In the unlikely event that engineering controls fail to eliminate all visible dust emissions reaching the nearest worker's breathing zone, an air-purifying respirator with high-efficiency particulate cartridges will be used until or unless integrated breathing zone sampling results indicate that the TLV is not exceeded. Either OSHA or National Institute for Occupational Safety and Health methods will be used should integrated air sampling be needed.

7.4 Site-Specific Action Levels

During intrusive work, direct-reading air monitoring will be ongoing to determine EZ workers' exposures. Site-specific action limits for upgrading protection levels are presented in Table 4.

The action level for volatile organic compounds is based on a consideration of site-specific contaminant concentrations, PID response, and historical experience under similar field conditions.

The action level for total dust that could carry nonvolatile soil contaminants was calculated to be 3.68 mg/m^3. This value represents the maximum time-weighted average concentration of airborne soil particulates needed to exceed the TLV of nonvolatile contaminants. A site-specific action level of 2.0 mg/m^3 enforced as a short-term limit will ensure that dust exposures will be well below the applicable TLVs. The observation of visible airborne dust will also trigger increased dust-control measures.

Composite equivalent dust calculations based on maximum non-volatile contaminant concentrations and current TLVs indicated that a site-specific action level of 2.0 mg/m^3 as measured with a direct- reading dust monitor in or near the breathing zone, and enforced as a short-term limit, will provide a wide margin of protection from all non-volatile site contaminants. The observation of visible airborne dust will also trigger increased dust-control measures.

7.5 Air Monitoring Record Keeping

The SSHO will ensure that all air monitoring data are logged. Data will include instruments used, wind direction, work process, etc.

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7.6 Air Monitoring Results

Air monitoring results will be available for workers' inspection and will be discussed during morning safety meetings. All air monitoring activities will be documented and provided in the completion report. Records will be archived in the project files.

7.7 Integrated Air Monitoring

The need for integrated air monitoring is not anticipated but may be conducted at the discretion of the HSM.

Table 4
Site-Specific Action Levels

Method	Monitoring Location	Monitoring Frequency [a]	Action Level [b]	Action
Volatile Organic Compounds by PID	Workers' breathing zones	Hourly	Up to 25 ppm in breathing zone above background	Level D
			>25 ppm in breathing zone above background	Increase vapor suppression efforts or increase ventilation.
Personal data-logging real-time aerosol monitor (total respirable) dust)	Workers' breathing zones	Ongoing	<2.0 mg/m^3	Use Level D
			>2.0 mg/m^3	Increase dust control and/or upgrade to Level C until concentrations are reduced
Visual dust observation	All work areas	Ongoing	Any visible airborne dust	Apply water or other suppression method

Notes:

[a] Frequency of air monitoring may be adjusted by the Project Certified Industrial Hygienist after sufficient characterization of site contaminants has been completed, tasks have been modified, or site controls have proven effective.

[b] Five readings exceeding the action level in any 15-minute period or a sustained reading exceeding the action level for 5 minutes will trigger a response.

>	*greater than*
<	*less than*
mg/m^3	*milligram per cubic meter*
PID	*photoionization detector*
ppm	*part per million*

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8.0 Training Requirements

Site workers will be trained in accordance with the OSHA HAZWOPER standard (Title 29, CFR, Section 1926.65, *Hazardous Waste Operations and Emergency Response*), and field personnel will have completed a 40-hour HAZWOPER training class. This training must cover PPE, toxicological effects of various chemicals, hazard communication, blood-borne pathogens, handling of unknown tanks and drums, confined-space entry procedures, electrical safety, and other relevant topics. In addition, these personnel must receive annual 8-hour refresher training and 3-day, on-site training under a trained, experienced supervisor. Supervisory personnel will have received an additional 8-hour training course in handling hazardous waste operations.

All personnel entering the EZ will be trained in the provisions of this SSHP and be required to sign the APP/SSHP Acknowledgement Form.

8.1 Site Orientation

Site orientation for on-site personnel and visitors will include the contents of this SSHO and all site-specific requirements.

8.2 Site Safety and Health Officer

As a minimum, the SSHO will have completed the 40-hour HAZWOPER class and the additional 45-hour Shaw Site Safety Officer course, which covers the subjects of the OSHA 30-hour construction safety and health training course that are applicable to the work to be performed.

8.3 Daily Safety Meetings

A safety meeting will be conducted by the SS and the SSHO before each shift begins. Topics to be discussed include task hazards and protective measures (i.e., physical, chemical, and environmental), emergency procedures, PPE levels, route to the medical facility (Figure 1), and other relevant safety topics. Meetings will be documented on a Tailgate Safety Meeting Form.

8.4 Radiation Awareness

Radiation awareness training will be required in radiologically impacted buildings. Currently sampling or vapor sampling is scheduled in three radiologically impacted buildings, Buildings 211, 253, and 272. One of these buildings, Building 272, is under contract by the Basewide Radiological Contractor. A radiological work instruction has been prepared to address radiological awareness training by the basewide radiological contractor and is provided in Appendix E of the Work Plan.

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8.5 Hazard Communication

An MSDS will be obtained for potentially hazardous materials used on site. These MSDSs will be kept on site with a copy of Shaw Procedure No. HS060, *Hazard Communications Program* (Shaw, 2010). Workers will be trained on the contents of the MSDSs, container labeling, and hazards of the chemicals to which they may be potentially exposed.

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9.0 Medical Surveillance Program

All site personnel who work in an EZ will be enrolled in a medical monitoring program as required by Title 29 CFR 1926.65 (f). Employees will receive a written physician's opinion that they are fit for general hazardous waste operations. The medical exam will include pulmonary function testing to determine medical clearance to use respiratory protective devices.

The contact information for Shaw's medical director, who is a board-certified occupational physician, is as follows:

Dr. William Nassetta, MD, MPH
CORE Health Services
12091 Bricksome Avenue, Suite B
Baton Rouge, LA 70816
225.756.2673 (office)
225.295.4846 (fax)

Emergency contact information is presented in Enclosure 5. A route map from the site to a nearby, approved occupational urgent care medical facility is also presented in Figure 1. The map and emergency telephone numbers will be posted on site.

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10.0 Emergency Action Plan

If an emergency occurs, employees will be evacuated from the danger area, and professional emergency responders, such firefighters or emergency medical services (EMS), will be summoned. Therefore, this Emergency Action Plan has been prepared pursuant to Title 29 CFR 1910.38, *Emergency Action Plans*. The Project CIH may be contacted for further information or explanation of duties under the plan.

10.1 Responsibilities

Prior to engaging in construction/remediation activities at the site, the SS will plan for possible emergencies such as fire, hazardous weather conditions, and medical emergencies. The SS is responsible for establishing emergency communication with potential emergency response organizations.

The primary emergency coordinator will be the SSHO. If an emergency occurs and the SSHO is not on site, the SS will serve as the emergency coordinator until the SSHO arrives. Immediately after being notified of an emergency incident, the emergency coordinator or designee will evaluate the situation to determine the appropriate action. Any alternate SSHO will have completed the required 30–hour OSHA Construction Safety Training or equivalent training applicable to the work being performed. At least two qualified first–aid/CPR responders will be on site at all times while work is being performed.

The on-site emergency coordinator is responsible for implementing and directing the emergency procedures. Specific duties are as follows:

- Identify the source and character of the incident.
- Assess possible hazards to human health or the environment that may result directly from the problem or its control.
- Discontinue operations in the vicinity of the incident if necessary.
- Signal the evacuation of the work area if necessary. Both the SS and the SSHO have the authority to order the evacuation of the work area.
- Notify the Client Representative and local Emergency Response Teams if their help is necessary to control the incident. Enclosure 5 provides telephone numbers for emergency assistance.
- If the incident may threaten human health or the environment outside of the site, notify the local police and fire department.

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10.2 Evacuation Signals and Alarm System

If site evacuation is required, a continuous, uninterrupted air horn or vehicle horn (backup) will be sounded for approximately 10 seconds. Voice and personal contact may also be used to initiate evacuation if practical.

Primary communication with emergency responders will be accomplished using commercial telephone services.

10.3 Evacuation Routes and Procedures

An Emergency Evacuation Route Map is presented in Figure 2. Evacuation routes will be posted in each outdoor work area. Signs inside trailers will be posted on walls or other structural element of a trailer. During an emergency, the evacuation routes noted on the map will be followed. If conditions such as wind direction or physical hazards do not allow access to the prescribed evacuation routes, the safest route available will be used. As work progresses, the emergency coordinator may alter these assembly areas depending on site and weather conditions. The site-specific evacuation procedures will be discussed in detail at the daily safety tailgate meeting, and workers will be given the opportunity to practice the evacuation drill, which will be critiqued for lessons learned.

In the event evacuation is necessary, the following actions will be taken:

- The emergency signal will be activated.
- No further entry of visitors, contractors, or trucks will be permitted. Vehicle traffic within the site will cease in order to allow safe exit of personnel and movement of emergency equipment.
- All project machinery and processes will be shut down if safe to do so.
- All on-site personnel, visitors, and contractors in the SZ will evacuate to the designated muster point location.
- The emergency coordinator will assign a worker to direct emergency responders to the site of the emergency.
- Re-entry into the site will be made only after clearance is given by the emergency coordinator, who will give a signal or other notification for re-entry into the facility.

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10.4 Procedures to Account for Site Workers after Evacuation

The following procedures will be used to account for site workers after an evacuation occurs:

- The emergency coordinator will maintain possession of the EZ log-in sheet and tailgate safety meeting form containing the names of the on-site workers.
- No one is to leave the site without notifying the emergency coordinator.
- All personnel will be accounted for by their immediate crew leaders (e.g., supervisor).
- Upon completion of the head count, the crew leader will provide the information to the emergency coordinator.
- A final tally of personnel will be made by the emergency coordinator or designee. No attempt to find personnel not accounted for will involve endangering lives of Shaw or other employees by re-entry into emergency areas.
- In all questions of accountability, immediate crew leaders will be held responsible for those personnel reporting to them. Visitors will be the responsibility of those employees they are seeing. Contractors and truck drivers are the responsibility of the SS.

10.5 Medical Emergencies

In the case of a medical emergency, EMS will be summoned by calling 911 from a landline, if readily available. Contractor employees who require nonemergency treatment for work-related injuries should be treated at the occupational urgent care facility that has been approved by Shaw's consulting occupational physician. A list of emergency contacts and the route map to the nearest approved occupational medical facility are presented as Enclosure 5 and Figure 1, respectively.

At least two qualified first-aid/CPR responders will be on site at all times work is being performed.

Personal injuries and illnesses are broadly categorized as life-threatening or nonlife-threatening. Guidance for handling both types is presented in the following sections.

10.5.1 Life-Threatening Injury or illness

If an apparent life-threatening condition exists, such as severe lacerations, profuse bleeding, severe burns, loss of consciousness, heat stroke, heart attack, respiratory failure, or severe allergic reaction, the emergency coordinator will take the following actions:

- Immediately call local EMS by dialing 911.
- Administer (or cause to have administered) first aid or CPR if appropriate.

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- Appoint a crew member to meet and guide the EMS to the injured worker.
- Have the injured worker decontaminated if necessary.
- Notify Shaw's consulting occupational medical service, which will become Shaw's liaison with the treating medical facility (Enclosure 5 lists telephone number).

The EMS will then transport the injured worker to their associated hospital emergency room.

10.5.2 Nonlife-Threatening Injury or Illness

If the injury is not life-threatening, the emergency coordinator will take the following actions:

- Direct the injured person through decontamination procedures (Section 10.6) if necessary.
- Administer (or cause to have administered) on-site first aid if appropriate.
- Contact Shaw's consulting occupational medical service for advice if professional medical care is deemed appropriate, and serve as Shaw's liaison with the treating medical facility.
- Coordinate transport of the injured person by his or her supervisor to the nearest occupational medical facility that has been approved by Shaw's consulting occupational medical professionals. Figure 1 presents the site route map to this facility.

10.5.3 Reporting, Investigation, and Review

All injuries, no matter how minor, will be reported to the SSHO or the SS. All occupational injuries or illnesses must be reported, investigated, and reviewed in accordance with Shaw Procedure No. HS020, *Accident Reporting, Investigation, and Review* (Shaw, 2010), which is presented in Enclosure 6.

10.6 Emergency Decontamination

The decision to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. Decontamination will be performed if warranted if it does not interfere with essential treatment, and if doing so does not endanger the life of the injured person or otherwise aggravate the injury. Personnel will not enter the area to attempt a rescue if their own lives would be threatened.

If decontamination cannot be performed, observe the following procedures:

- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination; instruct them about specific decontamination procedures.

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- Send site personnel familiar with the incident and chemical safety information with the affected person to the treating medical facility.

10.7 Fire Emergencies

Shaw personnel and subcontractors are not trained professional firefighters. Therefore, if there is any doubt that a fire can be quickly contained and extinguished, personnel will notify the emergency coordinator by radio and vacate the structure or area.

The following procedures will be used in the event of a fire:

- Anyone who sees a fire will notify the SSHO or designated emergency coordinator, who will activate the emergency notifications and contact the local fire department.
- When the emergency notification is made, workers will disconnect potentially affected electrical equipment, if possible.
- Workers will evacuate as described in Sections 10.2, 10.3, and 10.4.
- If a site worker extinguishes a small fire, the emergency coordinator will be notified, and the incident will be investigated.

10.8 Hazardous Weather

Adverse weather such as thunder and lightning storms, hail, dust storms, heavy rains, high winds, and tornados can increase the risk of injury from slip, trip, and fall hazards; the release of hazardous materials to the environment; structural failure; fires; and other hazards.

The best protection against most severe weather episodes and natural disasters is to avoid them. The emergency coordinator will be responsible for assessing hazardous weather conditions and notifying personnel of specific contingency measures. No operations will be started or continued when hazardous weather conditions such as lightning are present..

The emergency coordinator will determine when it is necessary to shut down project operations to prevent damage, to evacuate personnel to off-site locations, and to coordinate efforts with fire, police, and other agencies.

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11.0 References

American Conference of Governmental Industrial Hygienists (ACGIH®), 2010, *TLVs® and BEIs® Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices*.

Shaw Environmental & Infrastructure, Inc., 2010, *Health and Safety Policies and Procedures Manual.*

U.S. Army Corps of Engineers, 2008, *Safety and Health Requirements Manual, EM 385-1-1*, Washington, D.C., September 15.

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Figures

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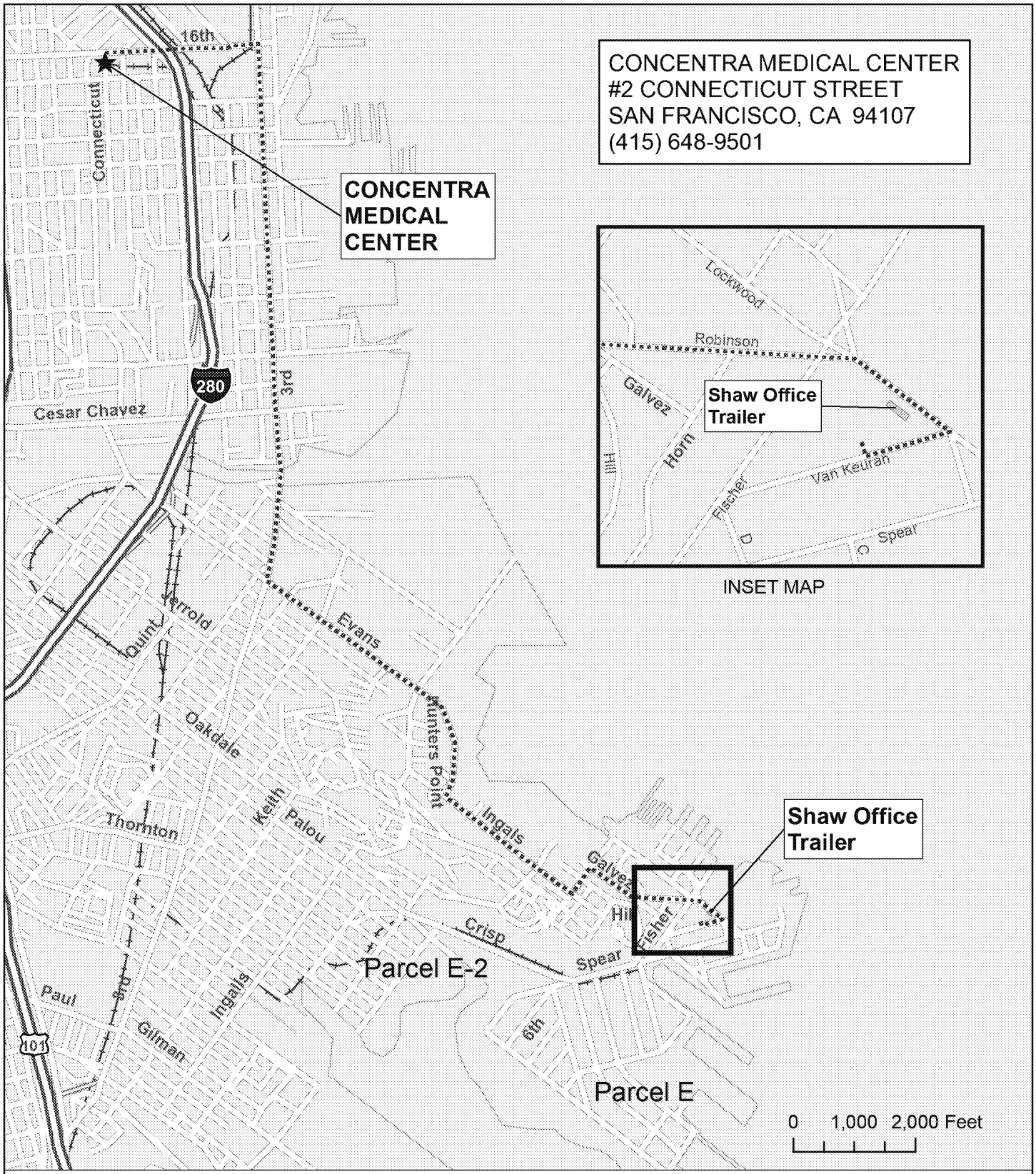

Legend

Route to Medical Facility

Shaw Office Trailer Location

DIRECTIONS TO MEDICAL CENTER:

Exit office area on VAN KEURAN
LEFT onto ROBINSON, becomes GALVEZ
LEFT onto DONAHUE
RIGHT onto INGALS
RIGHT onto EVANS
RIGHT onto 3RD STREET
LEFT onto 16TH STREET
End at #2 CONNECTICUT STREET

Shaw Environmental, Inc.

Hunters Point Naval Shipyard, San Francisco, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 1

MEDICAL FACILITY ROUTE MAP

PARCEL C REMEDIAL ACTION

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IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER	140368-A4
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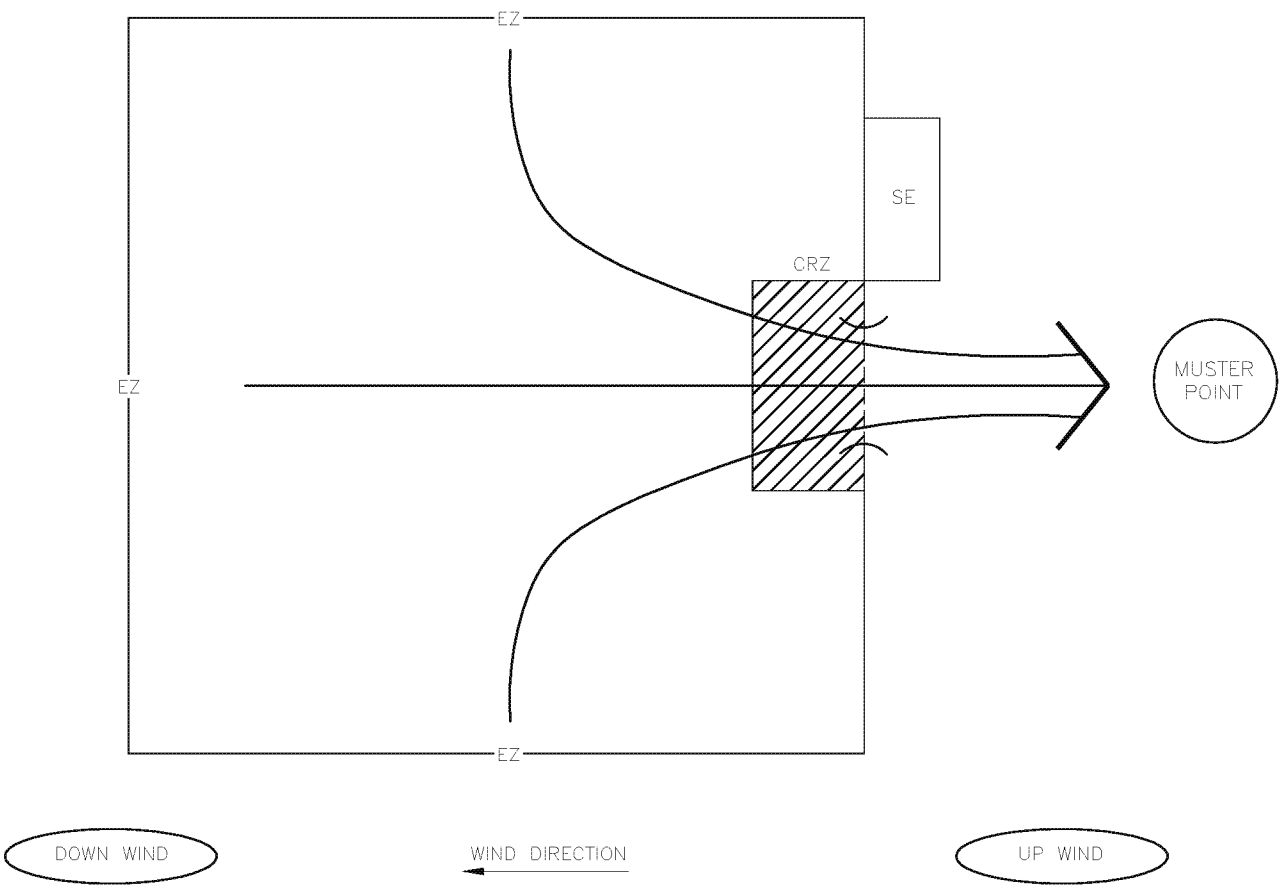

LEGEND

EZ	EXCLUSION ZONE
CRZ	CONTAMINANT REDUCTION ZONE
SZ	SUPPORT ZONE
)(	ENTRY/EXIT
⇒	EVACUATION ROUTE
SE	SAFETY EQUIPMENT (AIR HORN, FIRE EXTINGUISHER, FIRST AID KIT, EYEWASH, SHOWER)
<	WIND DIRECTION

NOT TO SCALE

Shaw® Shaw Environmental, Inc.

Hunters Point Naval Shipyard, San Francisco, California
Department of the U.S. Navy, BRAC PMO West, San Diego, California

FIGURE 2

EMERGENCY EVACUATION ROUTE MAP

Enclosure 1
Activity Hazard Analyses

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1-Activity Hazard Analysis (AHA)

Activity/Work Task: Vehicle Operations	Overall Risk Assessment Code (RAC)	**H**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (activity description)
This activity includes the accumulation, mobilization and demobilization of equipment and supplies to the project site.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
Vehicle Operation	Backing	• Back into parking spaces upon arrival, whenever possible. • Walk around the vehicle before backing in or out to identify any new conditions or obstructions. • Use a spotter when backing in or out whenever possible. • Understand hand signals. • Sound horn prior to backing in or out. • Check the rearview and side mirrors prior to backing, remembering mirrors do not show everything. (Note: All vehicles, other than automobiles, must have small convex mirrors attached to the side mirrors.) • Back slowly in areas of obstructed vision. • Anticipate others who may be backing out into your pathway and adjust accordingly.	**M**

Job Steps	Hazards	Controls	RAC
Vehicle Operation (continued)	Unfamiliar with vehicle	• Familiarize yourself with the vehicle before moving. • Review the dashboard controls, steering radius, overhead, and side clearances. • Properly adjust seat then mirrors. • Locate windshield wipers and lights.	L
	Airbags (if equipped)	• Familiarize yourself with the vehicle airbag system. • Adjust seat so the driver is outside the inflation envelope of the airbag and can still operate the pedals comfortably. • Vehicles equipped with airbags control switches (i.e., pickup trucks) must be turned on.	L
	Speed	• Obey all posted speed limits. • Radar detectors are prohibited in all company owned, leased, or rented vehicles. • Reduce travel speed during hazardous conditions (i.e., rain, fog, snow). • Identify if your vehicle has Anti-Lock Brakes (ABS). If it does, DO NOT pump the brakes to stop when the vehicle has begun to skid. Apply steady pressure to the brakes. If the vehicle does not have ABS, you will want to pump the brakes to stop during slippery conditions.	H
	Distances/Spacing	• Follow the 3 second rule. • Increase the 3 second rule as necessary during hazardous travel conditions (add one second for each hazard) • Always leave yourself an “out” during travel. • When stopping, make sure that you leave enough distance between you and the car in front of you. You should be able to see the rear tires of the vehicle in front, when stopped. • Drive defensively. • When at a red light, and it turns green, use the “delayed start” technique, by counting to three before you take your foot off the brake. • DO NOT TAILGATE.	H

Job Steps	Hazards	Controls	RAC
Vehicle Operation (continued)	Skids	• If the vehicle has begun to skid out of control, turn the steering wheel in the direction of the skid (the direction you want the vehicle to go) and readjust the wheel, as necessary. • Slow travel speeds during hazardous travel conditions. • Use 4-wheel drive, if available, when driving vehicles off road, on steep inclines, muddy conditions, etc. • Do not take vehicles "Off Road" if they cannot be operated safely.	**H**
	Blind spots	• Become familiar with any blind spots associated with your vehicle. • Adjust mirrors properly. • Make sure you use your directional signals. • Always look over your shoulder to ensure the lane is clear when changing lanes. • Be cautious when approaching other driver's blind spots.	**M**
	Cellular phones	• Do NOT USE handheld cellular phones while driving. • Pull over to the side of the road when making a call. (The shoulder of the freeway or expressway is not an authorized or a safe place to conduct phone calls. It is for emergencies only.)	**H**
	Accidents	• In the event of an accident: Stop, and call for medical assistance: notify police; complete Vehicle Accident Report and submit to your supervisor. • If a Shaw Environmental, Inc. (Shaw) employee is injured, the Health Resource, Return to Work, Medical Release and Treatment of injury/illness forms must be completed at the health clinic or emergency room.	**NA**
	Equipment failure	• Perform daily inspections of your vehicle. • Any vehicle with mechanical defects that may endanger the safety of the driver, passengers or the public shall not be used. • Ensure safety equipment is in the vehicle. Safety equipment should include a spare tire, jack, first aid kit, fire extinguisher, and flashlight. Flares and/or reflective triangles should be available in larger trucks. • Ensure the proper documentation is in the vehicle. Documentation should include operations manual for the vehicle, insurance card, vehicle registration and Shaw accident forms.	**L**

Job Steps	Hazards	Controls	RAC
Vehicle Operation (continued)	Influenced by drugs and alcohol	• NEVER DRIVE UNDER THE INFLUENCE OF DRUGS OR ALCOHOL. • Disciplinary actions, including termination, will be taken against anyone who is convicted of or pleads no-contest to the charges of driving under the influence in accordance with Shaw Environmental & Infrastructure, Inc. Procedure No. HS800. • Project assigned hourly employees are not permitted to operate company owned, leased or rented vehicles after 10:00 p.m. without written authorization from their supervisor.	**H**
	Driver = Alertness Attitude and Physical Condition	• Do not operate any vehicle when abnormally tired, temporarily disabled, or under the influence of drugs or alcohol. • Keep an even temper when driving. Do not let the actions of others affect your attitude. • No employee is authorized to operate a company vehicle (including rentals) after having been on- duty for a period of 16 hours. • No employee may drive for more than 12 hours in a single on duty period.	**H**
Vehicle Loading	Lost, damaged loads. Regulatory non-compliance Muscle, and back strains	• DO NOT OVERLOAD the vehicle. • Secure all equipment within the body of the vehicle. • Do not block side view mirrors with loads. • Do not transport Department of Transportation-manifested hazardous materials without a commercial driver's license. • Dispatch all equipment and personnel with proper forms and identification. • Don't lift and twist • Get help for awkward loads and for loads greater than 60 lbs	**M**
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI procedure HS045 "Job Safety Analysis" to facilitate field documentation	**NA**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Valid driver's license • Seatbelt • Vehicles equipped with passenger airbags • A spare tire and jack • First-aid kit, fire extinguisher, and flashlight • Operations manual for the vehicle • Insurance card, vehicle registration and Shaw accident forms	• Review AHA with all site personnel • Safety driver training for all Shaw drivers • Safe manual lifting techniques	• Inspect vehicles daily • Insure airbag switch is turned on (pickup trucks)

2-Activity Hazard Analysis (AHA)

Activity/Work Task: Site preparation	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807		
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)

Includes staging equipment, materials, and supplies in work areas, placement of temporary office and storage facilities, and installation of temporary fencing.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Job Steps	Hazards	Controls	RAC
Mobilizing Equipment	Striking workers, equipment	• Use spotters when backing • Know the safest route to and from your work area • Use flags, traffic cones to control traffic • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review posted hand signals	**M**
	Contact with overhead utilities	• Inspect area for overhead hazards • Maintain required overhead clearances from power lines: Nominal System Voltage — Minimum Required Clearances 0.6 - 50 kV — 10 feet over 50 - 75 kV — 11 feet over 75 - 125 kV — 13 feet over 125 - 175 kV — 15 feet over 175 - 250 kV — 17 feet over 250 - 370 kV — 21 feet over 370 - 550 kV — 27 feet over 550 - 1000 kV — 42 feet	

Job Steps	Hazards	Controls	RAC
Lifting Equipment and Materials	Muscle strains	• Observe 50 lb individual lifting limit • Don't lift and twist • Get help for awkward loads and for loads greater than 60 lbs • Train workers in safe lifting techniques	**M**
Walking onsite	Slip, Trip, and Falls	• Inspect work areas for washes, potholes, or other surface irregularities that could cause slips, trips or falls • Beware that uneven ground animal burrows could be obscured by vegetation earth and/or concrete rubble • Always establish good footing • Maintain good housekeeping. Keep walkways clear of construction debris, and tools • Wear lug-soled safety boots	**L**
	Biological Hazards (including insects and spiders)	• Inspect areas for, and avoid insects, spiders, snakes and poisonous plants • Avoid placing hands or feet into concealed areas • Use additional protective equipment such as coveralls and gloves if needed	**L**
Installing fencing	Power tools and hand tools	• Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar motions. • Assure guards are in place to protect from these parts of equipment during operations. • Provide and use proper work gloves when the possibility of pinching, or other injury. • Maintain all equipment in a safe condition. • Keep all guards in place during use. • De-energize machinery before maintenance or service. • Use the right tool for the job.	**M**
All Activities Onsite	High/Low Ambient Temperature	• Protect skin from ultraviolet rays by wearing your hard hat, long pants, long sleeved shirts, and sunscreen lotion • Wear clothing/PPE suitable for weather and working conditions • Keep an eye on your working buddy for signs of heat or cold stress. • Drink fluids and rest when needed • Monitor Heat/Cold Stress per SEI Procedure HS400/HS401	**L**
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI procedure HS045 "Job Safety Analysis" to facilitate field documentation	**NA**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Level D PPE: hard hat, safety boots, sleeved shirts and pants, abrasion resistant gloves, safety glasses	• Tailgate Safety Meeting • Site-specific orientation • Hazards of task specific tools and equipment	• Inspect equipment daily prior to use

3-Activity Hazard Analysis (AHA)

Activity/Work Task: Site Surveys, geophysical, land	Overall Risk Assessment Code (RAC)	**L**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (activity description)

A licensed subcontractor will conduct a utility survey to locate subsurface drilling hazards using multiple geophysical methods, including electromagnetic induction and ground penetrating radar. Utility lines found in the immediate vicinity of the proposed limits of intrusive activity will be marked using color-coded surveyor paint.

The completed wells will be surveyed by a California-licensed Land Surveyor.

Wellhead vapor measurement will be collected using a photoionization detector (PID) from the vapor extraction and monitoring wells.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Walking the Site Lifting Equipment and Materials	Slips, trips, and falls	• Inspect work areas for washes, potholes, or other surface irregularities that could cause slips, trips or falls. • Always establish good footing. • Maintain good housekeeping. Keep walkways clear of debris and tools.	L
	Muscle strains	• Observe 60 lb individual lifting limit. • Don't lift and twist. • Get help for loads greater than 60 lbs. • Train workers in safe lifting techniques.	L
Mobile Equipment	Striking workers or equipment	• Use spotters when backing. • Inspect area for overhead and underground hazards. • Know the safest route to and from your work area. • Use flags, traffic cones to control traffic.	L

Job Steps	Hazards	Controls	RAC
Walking or Working in Brush or Wooded Areas	Biological hazards (including snakes, insects, spiders, and poisonous plants)	• Inspect areas for, and avoid insects, spiders, snakes and poisonous plants. • Avoid placing hands or feet into concealed areas. • Use additional protective equipment such as coveralls and gloves if needed. • The best antidote for poisonous plants is recognition and avoidance. • Inspect areas for poison oak, which is bush-like with three-leaf clusters radiating from a stem. • Areas of known poison oak will be cordoned off prior to work and crew members will be informed of its location. • Work upwind and avoid contact with plant. • Wash the affected area with mild soap and water, but do not scrub the area.	**L**
All Exclusion Zone Activities	Inhalation or ingestion of dust	• Avoid activities that generate airborne dust. • Control dust by applying water if necessary. • Wash soil from hands prior to eating or drinking.	**L**
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI procedure HS045 “Job Safety Analysis” to facilitate field documentation.	**NA**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Level D personal protection: safety boots, Safety eyewear, long pants, ear protection, abrasion resistant gloves	• Tailgate Safety Meeting • HAZWOPER 40-hour • HAZWOPER 8-hour refresher • Worker must be trained in the safe application of task specific tools and materials	• Inspect all equipment at least daily • Utility clearance checklist

4-Activity Hazard Analysis (AHA)

Activity/Work Task: Excavation and Backfilling	Overall Risk Assessment Code (RAC)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)
Approximately 28,000 cubic yards of contaminated soils will be excavated from a 75,000 square foot area within the Parcel C footprint utilizing hydraulic excavators, wheel loaders, 10 yard dump trucks. Excavations will be 2' to 10' feet deep. Excavations will be backfilled with 2 inch minus angular rock, geotextile fabric over the rock, and clean soil, compacted to 90% relative density to fill the remainder of the excavation.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Heavy equipment operations	Struck By/Against Heavy Equipment	• Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Always be aware of movement of mobile equipment • Use buddy system to help monitor movement of mobile equipment • Communicate and coordinate with other contractors when working in or near their areas of operation • Know the safest route to and from your work area • Use flags, traffic cones to control traffic • Wear reflective warning vests • Understand and review hand signals • Excavations must be clear of all personnel when excavation is in process. All workers must stand clear of this activity	**M**

Job Steps	Hazards	Controls	RAC
Excavation	Contact with underground or overhead utilities	• Identify and mark utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Re-route selected utilities if necessary • Use manual excavation within 3 feet of known utilities • Maintain required overhead clearances from power lines: Nominal System Voltage — Minimum Required Clearance 0.6 - 50 kV — 10 feet over 50 - 75 kV — 11 feet over 75 - 125 kV — 13 feet over 125 - 175 kV — 15 feet over 175 - 250 kV — 17 feet over 250 - 370 kV — 21 feet over 370 - 550 kV — 27 feet over 550 - 1000 kV — 42 feet	M
	Exposure to airborne dust	• Apply water for dust control • Stop operations in high winds • Monitor airborne airborne dust with personal data-logging real-time aerosol monitor (PDR)	L
	Exposure to noise	• Use hearing protection if noise exceeds 85 decibels, A-Scale.	L
	Hazardous atmosphere	• The atmosphere in excavations 4 feet or deeper will be tested for combustible gases, oxygen deficiency, and total organic vapor concentrations prior to each entry.	L
Handling Heavy Objects	Back and muscle strain	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	L
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions	M
Collecting soil samples from trench	Unstable excavation, cave in	• Excavation competent person will be on site during all excavation work • Samples will be collected without bodily entering the excavation if practical • If workers must enter an excavation, they will be protected from cave-in pursuant to the site Specific Excavation/Trenching Plan and Shaw SOP HS307	L

Job Steps	Hazards	Controls	RAC
All outdoor work	High/Low Ambient Temperature	• Protect skin from ultraviolet rays by wearing your hard hat, long pants, long sleeved shirts, and sunscreen lotion, • Wear clothing / PPE suitable for weather and working conditions • Keep an eye on your working buddy for signs of heat or cold stress. • Drink fluids and rest when needed. • Monitor Heat/Cold Stress	L
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI procedure HS045 “Job Safety Analysis” to facilitate field documentation	NA

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Level D: hard hat, safety glasses, safety boots, long pants, sleeved shirt • Excavator or backhoe • Water truck for dust control • Photoionization detector PID • Personal data – logging real-time aerosol monitor (PDR)	• Excavation competent person, Mark Egan • Tailgate Safety Meeting • Site-specific orientation • Hazard Communication	• Daily inspection of mobile equipment by competent person • Excavation inspections by competent person using Excavation Checklist • Equipment inspections using Machinery and Mobile Equipment Checklist

5-Activity Hazard Analysis (AHA)

Activity/Work Task: Dump Truck Operations	Overall Risk Assessment Code (RAC)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (activity description)
Use of dump trucks to stockpile soil, asphalt and excavation debris.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Job Steps	Hazards	Controls	RAC
Preparation	Faulty equipment	The driver is responsible for understanding the capabilities and limitations of the truck and for inspecting the truck at the start of each shift: • Look for properly operating back-up alarms. • Test the effectiveness of the parking brake. • Inspect air brakes and brake lines, including drain tanks on large trucks. • Preventive maintenance should include regular lubrication of all pivot points. • Inspect tire sidewalls for cuts or gouges and for uniform inflation. • Cab windows must be kept clean. • Stairs, steps, straps used for climbing in and out of the cabs must be kept clean and in good repair. • Document inspection on Daily Driver Vehicle Inspection Report Form.	**M**

Job Steps	Hazards	Controls	RAC
Preparation (continued)	Inattentive driver	• Driver will not use head phones, cell phones, or other loud audio equipment in the cab while loading or dumping.	L
Loading	Falling, leaking, material	• Do not load while any person is near the side of the truck. • Prior to leaving the loading site, the driver is responsible for inspecting the load for even distribution, leakage, and stability. The loader operator will adjust the load if necessary. • Tarp the load if necessary.	L
Dumping	General	• Abort the dump and lower the bed if it begins to tilt. • Do not dump while any person is near the side of the truck. • ALWAYS LOWER THE BED FULLY BEFORE DRIVING THE TRUCK. A RAISED BED MAKES THE TRUCK VERY UNSTABLE WHILE TRAVELING.	M
	Unstable terrain = tip over hazard	• Stand on the ground to test for compressibility. If you sink in, call for heavy equipment to compact it. • Abort the dump and lower the bed if it begins to tilt.	L
	Uneven terrain = tip over hazard	• Have equipment operator “dress up” the area before dumping begins.	L
	Overhead hazards	• Maintain safe clearances from overhead obstacles. • Beware of obstacles and stability of the ground. Test the ground for firmness by standing on it.	L
	Wind = tip over hazard	• Always dump parallel to the direction of the wind (either facing directly into or directly away from the wind.). • If the wind conditions threaten truck stability, suspend operations until the winds die down.	L
	Slopes, trenches, or excavations = tip over hazard	**Use a spotter when dumping near slopes, excavations or trenches.** The spotter will: • Maintain a safe distance from trucks and other mobile equipment. • Maintain eye contact with the driver. • Agree with the drivers on a set of hand signals. • Alert the driver to hazardous conditions. • Watch for sinking tires and tilting of the bed as it is being raised. The driver will: • Keep wheels at least 5 feet away from the edge of any slope, excavation or trench. • Abort the dump and lower the bed if it begins to tilt.	L

Job Steps	Hazards	Controls	RAC
Dumping (continued)	Load sticking to bed = tip over hazard	• **Do not** pop the clutch to loosen or free the load. • **Do not** slam on the brakes to loosen the load. • Have the excavator scrape stuck material out of the bed. • Consider placing “slip sheets” in the bed prior to loading.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Dump truck • Level D as long as operator remains in cab while in the Exclusion Zone:, hard hat, safety glasses, safety boots, abrasion resistant gloves • Water truck for dust control • Direct reading dust monitor	• Inspect truck daily before use	• Tailgate Safety Meeting • Site-specific orientation • Hazard Communication • Hazards of task specific tools and equipment

6-Activity Hazard Analysis (AHA)

Activity/Work Task: Hand Auger Operations	Overall Risk Assessment Code (RAC) (M)
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**
Contract Number: N62473-10-D-0807	
Date Prepared: April 2011	
Prepared by: Fred Mlakar, HSM	
Reviewed by: Mark Egan, SSHO	

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)

Utility Clearance will be verified by driving hand auger at each drilling location to a minimum of 5 feet bgs prior to drilling.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Hand Auger Operations	Pinch Points	• Wear cut-resistant gloves. • Use caution when lifting (hand over hand). • Assemble the auger with a 2-foot, 3-foot, or 4-foot shaft when using bayonet clips. • Apply 0.5-inch Teflon® tape to all threads to facilitate • disassembly.	L
	Sunburn	• Wear sun screen (minimum SPF 15) to avoid sun burn.	L
	Caught In/Between Parts	• Identify and understand parts of equipment which may cause injuries. • Before operating the equipment, read, understand and follow the manufacturer's operating manual and safety decals on the equipment. • Assure screw-together couplings, slip together hex or slip together round "quick-connect" couplings are secure to protect from failure of these parts of equipment during operation.	L

Job Steps	Hazards	Controls	RAC
Hand Auger Operations (continued)	Caught In/Between Parts (continued)	• Use abrasion resistant work gloves. • Maintain all equipment in a safe condition. • Ensure that extension rods are used between the T-Handle and the auger bucket. • Use slide hammer to drive soil core liners into resistant soils.	
	Sprains and Strains	• Clear walkways and work area of tools and material. • Use buddy system, working in pairs. • Limit lift weight to 60 pounds. • Bend at the knees, keeping back straight and vertical, lifting directly over sample cores. • Use slide hammer to drive soil core liners into resistant soils. • Carry out a physical warm up prior to starting work to allow for maximum muscle flexibility. • Observe proper lifting techniques. • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads. • Avoid twisting, jerking motions while operating auger. • Use firm footing and leverage; crouch/squat, bend at the knees.	**M**
	Personal Hygiene	• No eating, drinking, smoking, chewing gum or tobacco, or applying of cosmetics or sun screen in work area. Provide a clean space, separated from the work area, for these activities. • Wash hands and face upon leaving the work area for breaks and lunch. • Upon leaving the work area, wash and dry face and hands.	**L**
	Inclement weather	• Cease operations during electrical storm.	**L**
	High Ambient Temperature	• Monitor for heat stress symptoms. • Drink sufficient water to prevent dehydration. • Wear clothing appropriate for weather.	**L**
	Exposure to site contaminants	• Review hazardous properties of site contaminants with workers before operations begin • Monitor breathing zone air to determine levels of contaminants with photoionization detector • Use Mechanical ventilation such as portable blowers and generator, to control vapors if indicated by air monitoring • Follow proper decontamination procedures to prevent ingestion of contaminants	**L**

Job Steps	Hazards	Controls	RAC
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, "Job Safety Analysis," to facilitate field documentation.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Hand Auger • Level D personal protection: Hard hat, safety boots, Safety eyewear, long pants, ear protection, abrasion resistant gloves • PID	• Tailgate Safety Meeting • HAZWOPER 40-hour • HAZWOPER 8-hour refresher • Worker must be trained in the safe application of task specific tools and materials	• Inspect all equipment at least daily

7 - Activity Hazard Analysis (AHA)

Activity/Work Task: Hollow Stem Auger Drilling operations, horizontal and vertical well installation,	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (activity description.)
A California-licensed drilling subcontractor will install 4-inch diameter soil vapor extraction and 2-inch diameter vapor monitoring wells using hollow-stem auger drilling.. 9 active wells will be decommissioned prior to source removal by excavation. 20 new RA monitoring wells will be installed. Air rotary casing hammer (ARCH) or equivalent rig will be used at bedrock locations and a Hollow Stem Auger rig at locations underlain by soil, sediment or fill.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Drilling operation (Preliminary Work)	Contacting Underground/ Overhead Utilities	• Scan, mark, and locate all utilities around the site before work commences. • Obtain and review all pertinent utility drawings• • Verify clearance using hand auger, vacuum excavating/air knife methods to a minimum depth of 5 feet bgs. • Cease work immediately if unknown utility markers are uncovered. • Check work areas for overhead lines and obstruction (trees, structures, etc.) prior to raising mast. • Required overhead clearances from power lines:	**M**

Nominal System Voltage	Minimum Required Clearance
0.6-50kV	10 feet
Over 50-75kV	11 feet
Over 75-125kV	13 feet
Over 125-175kV	15 feet
Over 175-250kV	17 feet
Over 250-370kV	21 feet
Over 370-550kV	27 feet

Job Steps	Hazards	Controls	RAC
Equipment Inspection Walk-around	Slips, trips, falls	• Use care in walking in work areas, there are several areas that have depressions, ground squirrel holes and uneven surfaces. • Clear walkways and work areas of equipment, tools, and debris. • Mark, identify, or barricade other obstructions. • Work areas and walkways should be kept free of materials, debris, and obstructions such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous. • Maintain good housekeeping on DPT rig and walking surfaces	**M**
Mobilization/Set-up drilling Rig	Instability of ground surface	• Set-up on stable and level terrain. • Set brakes and place wheel chocks under front wheels of rig. • Extend stabilizer jacks and ensure that footing is sound. • Drilling equipment must be level to the vertical and horizontal planes.	**L**
	Unauthorized personnel in work area	• Delineate exclusion zone/ drilling work area.	**L**
	Hydraulic hose leakage	• Inspect daily before use and continually throughout the day for leaks and damage	**L**
	Handling Heavy Objects	• Use -proper lifting techniques • Obey sensible lifting limits (60lbs Maximum per person manual lifting) • Use mechanical lifting equipment (handcarts, trucks) to move large, awkward loads	**M**
	Hand and Foot Injury from jaws and clamps	• Stay Clear! This area is for pipes only • Lock and tag out before any maintenance	**M**
	Slips, Trips, and fall	• Clear walkways, work areas of equipment, vegetation, excavated material, tools and debris • Mark, identify, or barricade other obstructions • Work areas and walkways should be kept free of materials, debris, and obstructions such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous	**L**
	Inclement Weather	• Cease operations during electrical storm or if winds exceed the manufacturers recommended limits	**L**
	Worker Distractions	• Use of all cell phones for personal business, entertainment devices • (iPods, stereos, radios, etc) while working is forbidden. • Make eye contact with operators before entering area	**L**

Job Steps	Hazards	Controls	RAC
Drill Rig operations	Pinch points, nip points, struck by or caught in moving parts, Hand and foot injury from jaws and clamps	• Crewmembers shall not wear loose clothing, long hair, jewelry, or equipment that might become caught in moving machinery. • Secure PPE close to the body to avoid getting caught in moving parts. • Loose PPE will be restrained by duct tape. • Unauthorized personnel must be kept clear of the rig. • Shut down, lock and tag out rig to make repairs or adjustments to the rig or to lubricate fittings. Release all pressure on the hydraulic systems, the drilling fluid system, and the air pressure systems of the drill rig prior to performing maintenance. • Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar injuries. • Neatly stack pipe, rods, and similar tools on racks or sills to prevent spreading, rolling or sliding. • Use abrasive resistant work gloves to avoid pinching, or other injury by moving/ handling large or heavy objects. • Maintain all equipment in a safe condition. • Avoid placing hands in places close to moving machinery • Provide means to guard against employee contact with rotating auger, such as a guard or barricade of perimeter of auger or electronic brake activated by a pressure-sensing device. (applies to vertical drill rig) • **Establish a system of responsibility for the operator and helpers to follow during the series of various activities**, such as connecting and disconnecting sections and inserting and removing the sections. • **Never reach behind or around a rotating augers for any reason.** • Clean augers only when the rig is in neutral and the equipment has stopped. • Don't place tools, (shovels, brooms, bars, etc) on or against the rig • Wear hard hats, safety glasses with side shields, and steel-toe safety boots at all times.	**M**
	High noise levels	• Use hearing protection if noise exceeds 35 decibels, A Scale.	**L**

Job Steps	Hazards	Controls	RAC
Drill Rig operations (continued)	Exposure to site contaminants	• Review hazardous properties of site contaminants with workers before operations begin • Monitor breathing zone air to determine levels of contaminants with photoionization detector • Use Mechanical ventilation such as portable blowers and generator, to control vapors if indicated by air monitoring	L
		• Follow proper decontamination procedures to prevent ingestion of contaminant	
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI procedure HS045 "Job Safety Analysis" to facilitate field documentation	NA

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Drill rig and associated equipment for vertical well installation • Level D personal protection: Hard hat, safety vest, safety boots, Safety eyewear, long pants, ear protection, abrasion resistant gloves • Modified Level D if splash protection is needed – Add disposable coverall to Level D • PID	• Tailgate Safety Meeting • Site-specific orientation • Hazard Communication • HAZWOPER 40-hr. • HAZWOPER 8-hour refresher • Worker must be trained in the safe application of task specific tools and materials	• Use this AHA as a checklist • Inspect at least daily • Inspect and operate in accordance with the drill rig manufacturer's operation manual • A copy of the manual will be available at the jobsite. • Drill rig to be operated only by designated qualified persons

8-Activity Hazard Analysis (AHA)

Activity/Work Task: Direct Push Technology (DPT)	Overall Risk Assessment Code (RAC)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011	Frequent / Likely / Occasional / Seldom / Unlikely	
Prepared by: Fred Mlakar, HSM	Catastrophic: E / E / H / H / M	
	Critical: E / H / H / M / L	
Reviewed by: Mark Egan, SSHO	Marginal: H / M / M / L / L	
	Negligible: M / L / L / L / L	

Notes: (Field Notes, Review Comments, etc.)

General description for scope of work of this activity:

A California-licensed subcontractor will inject substrate using direct-push technology (DPT) to stimulate anaerobic bioremediation .

Up to 90 temporary soil vapor gas monitoring points will be installed approximately 6 feet deep with a direct-push drill rig equipped with a core barrel, or with a small diameter hand auger.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
Equipment set up	Vehicle traffic	• Use spotter when backing.	NA
	Handling Heavy Objects	• Use proper lifting techniques. • Obey sensible lifting limits (60 pounds maximum per person manual lifting). • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads.	L
	Instability of ground surface	• Set-up on stable and level terrain.	L
	Security – unauthorized personnel in work area	• Area of DPT operation to be cordoned off.	L

Job Steps	Hazards	Controls	RAC
Equipment set up (continued)	Contact with overhead utilities	• Check work areas for overhead lines and obstruction (trees, structures, etc.). • Required overhead clearances from power lines: Nominal System Voltage — Minimum Required Clearance 0.6 - 50 kV — 10 feet Over 50 - 75 kV — 11 feet Over 75 - 125 kV — 13 feet Over 125 - 175 kV — 15 feet Over 175 - 250 kV — 17 feet Over 250 - 370 kV — 21 feet Over 370 - 550 kV — 27 feet Over 550 - 1000 kV — 42 feet	L
	Slips, trips, falls	• Clear walkways and work areas of equipment, tools, and debris. • Mark, identify, or barricade other obstructions. • Work areas and walkways should be kept free of materials, debris, and obstructions such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous.	L
	Contact with underground utilities	• Verify underground clearance by hand augering to 5 feet. If impractical, request variance from Shaw procedure	M
	Uninformed workers performing tasks	• Before DPT sampling is started ensure that everyone who operates the rig has had adequate training and is thoroughly familiar with the DPT rig, its controls, capabilities, and operating manual. • Prior to DPT operations, ALL personnel assigned to this drilling operation will attend a tailgate meeting. • This meeting will also cover the voice and hand signals associated with this type of activity. • Ensure that every site worker is informed of safe operating practices around the rig. • Ensure that every employee understands this AHA and the applicable subsections of EM 385-1-1, section 16m, “drilling equipment.”	L
Direct-Push Technology (DPT) Operation	Pinch points, nip points, struck by, or caught in moving parts	• Crewmembers shall not wear loose clothing, long hair, jewelry, or equipment that might become caught in moving machinery. Secure PPE close to the body to avoid getting caught in moving parts. • Unauthorized personnel must be kept clear of the DPT rig.	L

Job Steps	Hazards	Controls	RAC
Direct-Push Technology (DPT) Operation (continued)	Pinch points, nip points, struck by, or caught in moving parts	• Shut down, lock and tag out rig to make repairs or adjustments to the DPT rig or to lubricate fittings. Release all pressure on the hydraulic systems, the drilling fluid system, and the air pressure systems of the drill rig prior to performing maintenance. • Identify and understand parts of equipment which may cause crushing, pinching, rotating, or similar injuries. • Neatly stack pipe, rods, and similar tools on racks or sills to prevent spreading, rolling or sliding. • Wear abrasion resistant work gloves when moving/ handling large or heavy objects. • Maintain all equipment in a safe condition. • Keep all guards in place during use. • Establish a system of responsibility for the operator and helpers to follow during the series of various activities, such as connecting and disconnecting sections and inserting and removing the sections. • Clean Equipment only when the DPT rig is in neutral and the equipment has stopped.	
	Pinch points, nip points, struck by, or caught in moving parts (continued)		
	Emergencies	• Driller and helper must be present during all active operations and TEST THE TWO KILL SWITCHES DURING EACH STARTUP. • DPT rig helper and other site personnel must know location of the two emergency shutoff switches. • Area of drilling operation must be cordoned off/barricaded. • When hazardous conditions are deemed present, operation must be shut down.	L
	High Noise Levels	• Use hearing protection if noise levels exceed 85 decibels, A-scale.	L
	Exposure to site contaminants	• Review hazardous properties of site contaminants with workers before operations begin • Monitor breathing zone air to determine levels of contaminants with photoionization detector • Use Mechanical ventilation such as portable blowers and generator, to control vapors if indicated by air monitoring • Follow proper decontamination procedures to prevent ingestion of contaminants	L

Job Steps	Hazards	Controls	RAC
Injecting substrate	Chemical splash and fluids under pressure	• Ensure tight fittings in injection system • Wear eye protection near pressurized systems including chemical splash goggles or face shield where splash is a potential hazard • Train workers on the hazards associated with process chemicals. Applicable Material Safety Data Sheets will be onsite and reviewed by all employees working with chemicals.	L
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, "Job Safety Analysis," to facilitate field documentation.	NA

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• DPT rig and associated equipment • Level D personal protection: Hard hat, safety vest, safety boots, Safety eyewear, long pants, ear protection, abrasion resistant gloves • PID	• Tailgate Safety Meeting • Site-specific orientation • Hazard Communication • HAZWOPER 40-hour • HAZWOPER 8-hour refresher • Worker must be trained in the safe application of task specific tools and materials	• Inspect at least daily. • Inspect and operate in accordance with the drill rig manufacturer's operation manual. A copy of the manual will be available at the jobsite.

9-Activity Hazard Analysis (AHA)

Activity/Work Task: Installation, Operation and Maintenance of soil vapor extraction system	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (activity description.)

Install and test the soil vapor extraction (SVE) systems in RU-C1, C4. Construct SVE piping and remediation equipment, perform SVE system shakedown testing.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
Handling materials and equipment	Musculoskeletal strains and hand injury	• Use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help in moving bulky/heavy materials and equipment. • Use mechanical lifting equipment to move large, awkward loads. • Forklift operators must be trained in the safe operation of their assigned forklift • Wear cut-resistant work gloves to prevent injury may be caused by sharp edges or other objects.	**M**
Walking in the work area	Slips, trips, and falls	• Visually inspect work areas; mark, barricade, or eliminate slip, trip, and fall hazards. • Maintain good housekeeping. • Maintain proper illumination in work areas. • When workers are exposed to fall hazards greater than 6 feet, personnel will be protected by restriction of access to the fall hazard, a guardrail, or a personal fall arrest system (i.e., full-body harness and lanyard with appropriate anchorage point).	**M**

Job Steps	Hazards	Controls	RAC
Mobile equipment traffic	Struck by mobile equipment	• Always be aware of movement of mobile equipment • Use buddy system to help monitor movement of mobile equipment • Communicate and coordinate with other contractors working in same areas of • Know the safest route to and from your work area • Use flags, traffic cones to control traffic • Wear reflective warning vests • Make eye contact with operators before approaching equipment	**M**
Preparing for installation	Electrical and stored energy	• Follow Shaw E & I Procedure No. HS315, "Control of Hazardous Energy and Hazardous Material Sources (Lockout/Tagout)." • Determine all energy sources (electrical, mechanical, hydraulic, and pneumatic). • Work on electrical lines will be conducted by high voltage-certified electricians. • Confirm all energy lines are de-energized. • Verify isolation of lines.	**M**
Hot work	Fire	• Hot work procedures will be reviewed SSHO before hot work is performed. • Hot Work Permits will be procured before commencement of any hot work. • The Base Fire Department will be notified before starting any hot work.	**M**
Use of hand and power tools for installing pipe, electrical and mechanical equipment	Lacerations, punctures, electric shock	• Select the proper tool – do not improvise. • Check the condition of tools before starting (do not use damaged tools). • Keep tools clean and free of dirt, grease, and oil. • Inspect tool handles for splits, cracks, loose heads, etc. • Keep cutting tools sharp. • Wear proper protective equipment such as goggles, face shields, and gloves. • Keep the work area safe, remove clutter, maintain dry floors, and have plenty of room to work. • Secure all work -- use clamps or a vise to prevent sudden movement. • Avoid distraction, keep your focus, and concentrate on the job. • Be aware of who and what is around you when using hand tools. Check your position, footing, and grip before tool use. • Use pneumatic or double-insulated power tools when possible.	**M**

Job Steps	Hazards	Controls	RAC
Use of hand and power tools for installing pipe, electrical and mechanical equipment (continued)	Lacerations, punctures, electric shock (continued)	• Protect electric tools with ground fault circuit interrupters. • Maintain all hand and power tools in a safe condition and keep guards in place during use.	
Use of glues, coatings, lubricants	Eye, throat, or Skin, irritation	• Material Safety Data Sheets (MSDS) will be available for all chemicals brought on site. • Follow directions for proper use of chemicals found on container labels and MSDS. • Minimize manual contact with coatings, lubricants, and other contaminants. • Use gloves to avoid contact if directed by MSDS • Wash hands, arms, face, and neck after potential exposure to chemicals.	L
Use of flammable glues, coatings, lubricants	Fire / Explosions	• Eliminate sources of ignition from the work area. • Prohibit smoking in work areas. • Provide ABC fire extinguishers for all work, flammable storage areas. • Store flammables in a well ventilated area. • Prohibit storage of flammables in plastic containers. • Store combustible materials away from flammables. • Store and secure all compressed gas cylinders in an upright position with caps in place when not in use. • Separate flammables and oxidizers by 20 ft. minimum.	L
Use of portable ladders	Falls from ladders Struck by falling materials, tools, or equipment	• Ladder will be inspected before each use and defective ladders withdrawn from service immediately. • Place portable ladders on a substantial base at a 4:1 pitch, have clear access at top and bottom, extend a minimum of 36 inches above landing or, where not practicable, provide grab rails. Secure against movement while in use. • Portable metal ladders may not be used for electrical work or where they may contact electrical conductors. • Job-made ladders will be constructed for their intended use. • Limited access zones will be established below ladders and workstations and/or workers protected from falling materials, tools, and equipment.	M

Job Steps	Hazards	Controls	RAC
Install electrical systems	Electric shock	• Qualified electricians will install all electrical components. • Ground fault circuit interrupters will be used on all portable electrical equipment, power tools, and extension cords. • Only hard or extra-hard usage extension cords will be used. • Extension cords, power tools, and lighting equipment will be inspected before each use, protected from damage, and kept out of wet areas. Lock-out/tag-out procedures may apply.	**M**
Working near noisy equipment	Noise induced hearing loss	• Use hearing protection where noise exceeds 85 decibels (A-weighted) and where noise is sufficient to interfere with normal speech.	**L**
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI procedure HS045 “Job Safety Analysis” to facilitate field documentation	**NA**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Level D –Hard hat, safety boots, hearing protection, safety glasses and abrasion resistant gloves, ear protection • Fire extinguisher • GFCI • Hand and power tools	• Tailgate Safety Meeting • Site-specific orientation • Operator must be trained in the safe operation of the equipment to be used; including the manufacturer’s operating manual instructions. • First Aid/CPR	• Competent person will inspect equipment prior to each use. No equipment will be placed in service until all deficiencies are corrected. • Complete Shaw’s equipment inspection form

10-Activity Hazard Analysis (AHA)

Activity/Work Task: Compressed gas handling and storage	Overall Risk Assessment Code (RAC)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)
Prior to injecting the anaerobic substrate, Injection contractor ARS will pneumatically fracture each injection interval using nitrogen gas to increase the permeability of the formation. This technology will be used for distribution of both the ZVI and the organic bioremediation substrates.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Job Steps	Hazards	Controls	RAC
Compressed nitrogen gas cylinder handling, and storage	Sprains and strain due to handling heavy objects	• Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads • Observe proper ergonomic lifting techniques (lift with legs not with back)	**M**
	Gas under pressure	• Cylinder caps must be in place before being moved • All safety valves must be constricted, installed, tested and maintained in accordance with the ASME code for unfired pressure vessels • All hoses pipes, valves, filters and other fittings must	**M**

Job Steps	Hazards	Controls	RAC
Compressed nitrogen gas cylinder handling, and storage (continued)	Gas under pressure (continued)	• be pressure rated by the manufacturer and these pressures must not be exceeded. Store cylinders in well ventilated areas • Store cylinders securely and upright • Eliminate sources of ignition from the work area • Store, all compressed gas cylinders upright, caps in place when not in use	
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions	**M**
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use	**L**
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, "Job Safety Analysis," to facilitate field documentation.	**NA**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Hardhat, safety glasses, goggles, or face shields, Safety boots, cotton or leather gloves, cotton work clothing, portable fire extinguishers	• Tailgate Safety Meeting • Site-specific orientation • Hazard Communication • HAZWOPER 40-hour • HAZWOPER 8-hour refresher • Worker must be trained in the safe application of task specific tools and materials	• Inspect all equipment at least daily.

11-Activity Hazard Analysis (AHA)

Activity/Work Task: Groundwater sampling	Overall Risk Assessment Code (RAC) (Use highest code)	L
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)

Groundwater samples will be collected for two tasks pre-characterization, baseline and post remediation sampling. Pre-characterization samples will be collected from monitoring wells and soil borings. Baseline and post injection groundwater samples will be collected during the second Remedial Action phase of work.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Groundwater Gauging and Sampling	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects	L
	Handling Heavy Objects	• Maintain all hand and power tools in a safe condition • Keep guards in place during use • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	L
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, tools, vegetation, excavated material, and debris • Mark, identify, or barricade other obstructions	L

Job Steps	Hazards	Controls	RAC
Groundwater Gauging and Sampling (continued)	Inhalation and skin contact with water contaminants	• Level D plus Tyvek® or equivalent coveralls if splash protection is needed, nitrile gloves • Review hazardous properties of site contaminants with workers before operations begin • Monitor breathing zone air to determine levels of contaminants with photoionization detector • Use Mechanical ventilation such as portable blowers and generator, to control vapors if indicated by air monitoring • Follow proper decontamination procedures to prevent ingestion of contaminants	**L**
	Caught between/ Pinch Points	• Inspect moving parts and guards on pump before operations begin • Make sure guards are in place before operating pump	**L**
	Skin cancer from sun exposure	• Cover up exposed skin or use sunscreen lotion with a protection factor of at least 15	**M**
	High/Low Ambient Temperature	• Monitor for Heat/ in accordance with Shaw Health and Safety Procedures # HS400 • Provide fluids to prevent worker dehydration • Insulated Clothing (subject to ambient temperature	**L**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Level D personal protection: hard hat, safety boots, safety eyewear, long pants, nitrile gloves • Photoionization detector	• Tailgate Safety Meeting • Site-specific orientation • Hazard Communication • HAZWOPER 40 hr. • HAZWOPER 8 hour refresher • Worker must be trained in the safe application of task specific tools and materials	• Inspect and operate in accordance with equipment manufacturer's operation manual • Inspect at least once monthly

12-Activity Hazard Analysis (AHA)

Activity/Work Task: Waste Management	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011	Frequent / Likely / Occasional / Seldom / Unlikely	
Prepared by: Fred Mlakar, HSM	Catastrophic: E / E / H / H / M	
	Critical: E / H / H / M / L	
Reviewed by: Mark Egan, SSHO	Marginal: H / M / M / L / L	
	Negligible: M / L / L / L / L	
Notes: (Field Notes, Review Comments, etc.) Potentially contaminated soil cuttings from well installation will be containerized in 55-gallon steel drums and/or 10-yard soil bins that will be held at the site prior to disposal. Wastewater from well development and sampling will be contained in a holding tank and/or 55 gallon drums at the site prior to re-use onsite.	Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)	
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	**RAC Chart**
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E = Extremely High Risk H = High Risk M = Moderate Risk
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	L = Low Risk

Job Steps	Hazards	Controls	RAC
Drums Handling	Handling heavy objects	• Observe proper lifting techniques. • Obey sensible lifting limits (60 lbs. maximum per person manual lifting). • Use mechanical lifting equipment (hand carts, trucks, forklift) to move large loads, awkward loads. • Check and secure drum lids before moving.	M
	Caught In/Between moving parts	• Identify and understand parts of equipment which may cause crushing, pinching, rotating, or similar motions. • Assure guards are in place to protect from these parts of equipment during operations. • Abrasion resistant work gloves when the possibility of pinching, or other injury may be caused by moving / handling large or heavy objects. • Maintain all equipment in a safe condition. • Keep all guards in place during use. • De-energize and lock-out machinery before maintenance or service	L

Job Steps	Hazards	Controls	RAC
Drums Handling (continued)	Slips, Trips, Falls	• Clear walkways, platforms, access steps and work areas of equipment, tools, and debris. • Mark, identify, or barricade other obstructions. • Work areas, platforms and walkways should be kept free of materials, debris, and obstructions such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous. • Maintain 3 point contact when mounting / dismounting heavy equipment. • Maintain Good Housekeeping.	M
	Sharp objects	• Wear abrasion resistant work gloves. • Inspect hand tools before use. • Keep guards in place during use.	L
	Vehicle traffic	• Use spotter when backing. • Survey route to work locations. Inform crew of hazards. • Wear reflective vest when exposed to heavy equipment or traffic.	L
	Struck by/against heavy equipment, protruding objects	• Isolate equipment swing area. • Require backup alarms on all heavy equipment. • Make eye contact with operators before approaching equipment. • Understand and review hand signals.	L
	Inhalation and contact with hazardous substances	• Review hazardous properties of site contaminants with workers before work begin. • Monitor breathing zone pursuant to SSHP. • Avoid skin contact with contaminated waste. • Avoid inhalation of dust or vapors	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Level D: hard hat, safety glasses, safety boots, ear protection, abrasion resistant gloves • Hand tools • Drum dolly • Forklift	• Tailgate Safety Meeting • Site-specific orientation • HAZWOPER 40-hr. • HAZWOPER 8-hour refresher • 8-hr Supervisor training • Forklift operator training	• Visual prior to use • Calibrate prior to use • Inspect daily before work starts • Inspect daily • Use this AHA as a checklist

13-Activity Hazard Analysis (AHA)

Activity/Work Task: Waste soil, asphalt, and concrete segregation, stockpiling and transport.	Overall Risk Assessment Code (RAC)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes:

The excavated soils will be hauled to the on-site soil disposal stockpile area. Soil will then be characterized and transported to the Navy's onsite waste storage area.

Asphalt and concrete debris that is generated from the excavation areas within the Parcel C area will be stockpiled. If underground items in the excavation footprint are encountered (piping, tanks, railroad ties, rail, etc.) they will be removed, segregated and stockpiled.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Preparation	Faulty equipment	• The driver is responsible for understanding the capabilities and limitations of the truck and for inspecting it at the start of each shift. • Look for properly operating back-up alarms. • Test the effectiveness of the parking brake. • Inspect air brakes and brake lines, and drain tanks on large trucks. • Preventive maintenance should include regular lubrication of all pivot points. • Inspect tire sidewalls for cuts or gouges and for uniform inflation. • Cab windows must be kept clean. • Stairs, steps, straps used for climbing in and out of the cabs must be kept clean and in good repair. • Document inspection on Daily Driver Vehicle Inspection Report Form	**M**

Job Steps	Hazards	Controls	RAC
Preparation (continued)	Inattentive driver	• Driver will not use head phones, cell phones, or other loud audio equipment in the cab while loading or dumping	M
Excavator and/or loader used to load soil	Striking workers or equipment	• Use spotters when backing • Inspect area for overhead and underground hazards • Know the safest route to and from your work area • Use flags, traffic cones to control traffic • Establish work zone to safely accommodate swing radius • Monitor breaking operations and upgrade ppe as necessary or move personnel back to avoid flying debris hazard	M
Loading dump truck	Falling, leaking, material	• Do not load while any person is near the side of the truck • Prior to leaving the loading site, the driver is responsible for inspecting the load for even distribution, leakage, and stability. The loader operator will adjust the load if necessary. • Tarp the load if necessary.	M
Dumping	General	• Abort the dump and lower the bed if it begins to tilt • Do not dump while any person is near the side of the truck • ALWAYS LOWER THE BED FULLY BEFORE DRIVING THE TRUCK. A RAISED BED MAKES THE TRUCK VERY UNSTABLE WHILE TRAVELING.	M
	Unstable terrain = tip over hazard	• Stand on the ground to test for compressibility. If you sink in, call for heavy equipment to compact it. • Abort the dump and lower the bed if it begins to tilt.	M
	Uneven terrain = tip over hazard	• Have equipment operator “dress up” the area before dumping begins	M
	Overhead hazards	• Maintain safe clearances from overhead obstacles • Beware of obstacles and stability of the ground. Test the ground for firmness by standing on it	M
	Slopes, trenches, or excavations = tip over hazard	• Use a spotter when dumping near slopes, excavations or trenches. • The spotter will: • Maintain a safe distance from trucks and other mobile equipment • Maintain eye contact with the driver • Agree with the drivers on a set of hand signals • Alert the driver to hazardous conditions • Watch for sinking tires and tilting of the bed as it is being raised • The driver will:	M

Job Steps	Hazards	Controls	RAC
Dumping (continued)	Slopes, trenches, or excavations = tip over hazard (continued)	• Keep wheels at least 5 feet away from the edge of any slope, excavation or trench. • Abort the dump and lower the bed if it begins to tilt.	
	Wind = tip over hazard	• Always dump parallel to the direction of the wind (either facing directly into or directly away from the wind.) • If the wind conditions threaten truck stability, suspend operations until the winds die down.	L
	Load sticking to bed = tip over hazard	• **Do not** pop the clutch to loosen or free the load • **Do not** slam on the brakes to loosen the load • Have the excavator scrape stuck material out of the bed • Consider placing "slip sheets" in the bed prior to loading	L
Loading and dumping	Exposure to airborne dust	• Apply water for dust control • Monitor dust exposures for personnel and at exclusion zone perimeters	L
Driving to and from site	Traffic and other road hazards	• Review site specific Traffic Control Plan • Review AHA for Vehicle operations	NA
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI procedure HS045 "Job Safety Analysis" to facilitate field documentation	NA

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Modified Level D –, safety boots, hard hat, hearing protection safety glasses and abrasion resistant gloves, ear protection near heavy equipment • Excavator and/or front end loader • Dump Truck • Fire extinguisher • Water source and hose	• Tailgate Safety Meeting • Site-specific orientation / • Operator must be trained in the safe operation of the equipment to be used; including the manufacturer's operating manual instructions. • As required by Radiation Protection Plan • HAZWOPER 40 hr. • HAZWOPER 8 hour refresher • First Aid/CPR	• Competent person shall inspect equipment prior to each use. No equipment will be placed in service until all deficiencies are corrected. • Complete Shaw's equipment inspection form

14-Activity Hazard Analysis (AHA)

Activity/Work Task: Concrete Coring	Overall Risk Assessment Code (RAC)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Mark Egan, SSHO		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes:
Concrete coring will be required in Buildings 231 and 272 for the groundwater characterization and in buildings 211, 231, 253 and 272 for soil vapor characterization. Each building has unique structures. Care will be taken to avoid drilling in areas of excessively thick concrete such as in areas where pre-cast vaults are present.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Site preparation	Slips, Trips, Falls	• Clear walkways, work areas of equipment, tools, other debris • Mark, identify, or barricade other obstructions	L
Handling equipment and materials	Musculoskeletal injuries	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	M
Coring operations	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) and/or when noise is sufficient to inhibit normal speech.	L
	Sharp Objects, pinch points	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp tools, edges, or objects • Maintain all tools in a safe condition • Keep guards in place during use	L

Job Steps	Hazards	Controls	RAC
Coring operations (continued)	Inhalation and Contact with dust particles; eye injury	• Control dust while cutting by applying water • Use, eye protection • Review hazardous properties of dust (silica) with workers before operations begin	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Concrete coring equipment • Level D personal protection: Hard hat, safety vest, safety boots, Safety eyewear, long pants, ear protection, abrasion resistant gloves	• Tailgate Safety Meeting • Site-specific orientation • Hazard Communication • Worker must be trained in the safe application of task specific tools, equipment and materials	• Inspect all equipment and tools daily before work starts. • Inspect and operate equipment in accordance with manufacturers' manuals

15-Activity Hazard Analysis (AHA)

Activity/Work Task: Air rotary casing hammer drilling	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: April 2011		
Prepared by: Fred Mlakar, HSM		
Reviewed by: Wayne Akiyama		
Notes: (activity description.)		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
Drilling operation (Preliminary Work)	Uninformed workers performing tasks	• Prior to drilling operations, ALL personnel assigned to this drilling operation will attend a site-specific meeting. • ENSURE THAT EVERY WORKER IS INFORMED OF SAFE OPERATING PRACTICES ON AND AROUND THE RIG. • ENSURE THAT EVERY EMPLOYEE UNDERSTANDS THIS AHA. This meeting will also cover the voice and hand signals associated with this type of activity. • Before sampling is started ensure that everyone who operates the rig has had adequate training and is thoroughly familiar with the drill rig, it's controls, capabilities and operating manual. • Minimum PPE requirement is Level D (See page 6 of 6, under Equipment to be used).	**M**
	Contacting Underground/ Overhead Utilities	• Scan, mark, and locate all utilities around the site before work commences. • Cease work immediately if unknown utility markers are uncovered. • Use manual excavation within 3 feet of known utilities.	**L**

Job Steps	Hazards	Controls	RAC
Drilling operation (Preliminary Work) (continued)	Contacting Underground/ Overhead Utilities (continued)	• Utility clearance shall conform with Shaw procedure HS308, including USA Notification, and hand augering or air knife clearing. • Lower boom prior to moving rig, if applicable.	
Equipment Inspection Walk-around	Slips, trips, falls	• As indicated in Section 2 (page 6 of 6) of this AHA, under Inspection Requirements. The applicable portions of the Drilling Equipment Checklist will be used prior to commencement of work. The checklist is attached to this AHA. • Clear walkways and work areas of equipment, tools, and debris. • Mark, identify, or barricade other obstructions. • Work areas and walkways should be kept free of materials, debris, and obstructions such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous. • Rigging / Lifting of drill pipe,	L
Mobilization/Set-up air rotary drilling rig	Equipment tip over Hydraulic hose leakage Musculoskeletal injuries	• Set-up on stable and level terrain. • Inspect daily before use and continually throughout the day for leaks and damage. • Use proper lifting techniques. • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads.	L
	Hand and foot injury from jaws and clamps	• Stay clear! This area for pipes only. • Lock and tag out before any maintenance.	M
	Slips, trips, falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris. • Mark, identify, or barricade other obstructions. • Work areas and walkways should be kept free of materials, debris, and obstructions such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous.	L
Drilling operations	Hand and foot injury from jaws and clamps	• Stay clear! This area for pipes only. • Lock and tag out before any maintenance.	M
	Emergencies	• Driller and helper must be present during all active operations and TEST THE TWO KILL SWITCHES DURING EACH STARTUP. • Helper and other site personnel must know location of the two emergency shutoff switches.	L

Job Steps	Hazards	Controls	RAC
Drilling operations (continued)	Emergencies (continued)	• Area of drilling operation must be cordoned off/barricaded. • Shut down equipment during heavy winds and electrical storms	
	Compressed air	• Make sure compressed air lines are doubly secured using whip checks	L
	Noise from percussion hammer and cyclone cuttings separator.	• Use hearing protection when operating or near drill rig • Use hearing protection anywhere noise levels exceed 85 db	L
	Pinch points, nip points, struck by, or caught in moving parts	• Crewmembers shall not wear loose clothing, long hair, jewelry, or equipment that might become caught in moving machinery. Secure PPE close to the body to avoid getting caught in moving parts. • Unauthorized personnel must be kept clear of the rig. • Shut down, lock and tag out rig to make repairs or adjustments to the rig or to lubricate fittings. Release all pressure on the hydraulic systems, the drilling fluid system, and the air pressure systems of the drill rig prior to performing maintenance. • Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar injuries. • Neatly stack pipe, rods, and similar tools on racks or sills to prevent spreading, rolling or sliding. • Wear proper work gloves when the possibility of pinching, or other injury may be caused by moving/ handling large or heavy objects. • Maintain all equipment in a safe condition. • Keep all guards in place during use. • Establish a system of responsibility for the operator and helpers to follow during the series of various activities, such as connecting and disconnecting drill rod sections and inserting and removing the drill rod sections. • Never reach behind or around a rotating augers for any reason.	M
	Airborne dust from cuttings blown into a cyclone separator into a hopper.	• Use engineering controls to minimize airborne dust – use water spray, containment and avoidance methods. • Monitor breathing zone air to determine levels of contaminants with photoionization detector.	L
	Petrol Tong Chain Wrench	• Always stand away from the line of sight from items put under pressure. This includes chains attached to wrenches, draw-works, chains or slings in the event that the piece of equipment fails.	M

Job Steps	Hazards	Controls	RAC
Drilling operations (continued)	Tripping Drill Pipe out of the Borehole	• Always stand or position ones self in front of the Drill Rig while Tripping operations are being conducted. • Tripping operations utilize gravity, a sling attached to steel cable. In the event that the cable breaks, there is a danger of the pipe falling to one side of the support truck or the other.	M
	Handling Heavy Objects	• Observe proper lifting techniques. • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Air rotary drill rig and associated equipment • Level D personal protection: Hard hat, safety vest, safety boots, Safety eyewear, long pants, ear protection, abrasion resistant gloves • Forklift, soil collection bins • PID	• Tailgate Safety Meeting • Site-specific orientation • Worker must be trained in the safe use of task specific tools and materials • Wayne Akiyama, Competent Person	• Use this AHA as a checklist • Inspect at least daily • Inspect and operate in accordance with the drill rig manufacturer's operation manual • A copy of the manual will be available at the jobsite.

16 – Activity Hazard Analysis (AHA)

Activity/Work Task: Soil Vapor Sampling	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: Remedial Units C1, C4, C5 and Building 241 Area, Hunters Point Shipyard, San Francisco, California	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62473-10-D-0807	**Severity** / **Probability**	
Date Prepared: February 2012		
Prepared by (Name/Title): Wayne Akiyama, Technical Lead		
Reviewed by (Name/Title): Fred Mlakar, HSM		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)
Soil vapor sampling will be collected using one of three methods, syringe, tedlar bag or summa canister. Soil vapor samples will be collected within a shroud to allow a tracer to be releasted into a controlled atmosphere.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
Working near heavy equipment operations	Struck By/Against Heavy Equipment	• Wear reflective warning vests when exposed to vehicular traffic • Make eye contact with operators before approaching equipment • Understand and review posted hand signals	M
All activities on site	High/Low Ambient Temperature	• Protect skin from ultraviolet rays by wearing your hard hat, long pants, long sleeved shirts, and sunscreen lotion • Wear clothing/PPE suitable for weather and working conditions • Keep an eye on your working buddy for signs of heat or cold stress • Drink fluids and rest when needed • Monitor Heat/Cold Stress per SEI Procedure No. HS400/HS401	L
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use	L

Job Steps	Hazards	Controls	RAC
All activities on site (continued)	Biological Hazards	• Inspect areas for, and avoid spiders, • Avoid placing hands or feet into concealed areas • Use additional protective equipment such as coveralls and gloves if needed	L
	Working alone	• Use the buddy system during all operations. The buddy must be within a line of sight or hearing of the partner and be prepared to enter any area the partner enters.	M
Changed or Unanticipated Conditions	Safety or health hazards that may be derived from changed or unanticipated conditions	• Modify the AHA as often as necessary to address new or unanticipated hazards. Use SEI Procedure No. HS045, "Job Safety Analysis" to facilitate field documentation	NA

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Level D PPE: hard hat, safety boots, sleeved shirts and pants, abrasion resistant gloves, safety glasses	• Tailgate Safety Meeting • Site-specific orientation • Hazard Communication • Radiological Worker Training • HAZWOPER 40 hour • HAZWOPER 8 hour refresher • Hazards of task specific tools and equipment • Mark Vennemeyer, SSHO, Competent person • Wayne Johnson, Competent person	• Inspect equipment daily prior to use

Enclosure 2
Heat Stress Procedure (EI-HS400)

PROCEDURE

Subject: HEAT STRESS

1.0 PURPOSE AND SUMMARY

This procedure establishes guidelines to protect employees from the effects of heat related illness. It describes the five major types of heat-induced illnesses, methods of prevention and treatment, and prescribes heat stress monitoring methods.

2.0 TABLE OF CONTENTS

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Director of Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Acclimatization - Temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

Heat Stress – The net heat load to which a worker may be exposed from the combined contributions of metabolic cost of work, clothing requirements, and environmental factors such as air temperature, humidity, air movement, and radiant heat exchange. Mild or moderate heat stress can cause discomfort and adversely affect performance and safety but is not harmful to health. As the heat stress approaches human tolerance limits, the risk of heat illness increases.

Shade – Blockage from direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indication that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of the shade, which is to allow the body to cool.

5.0 TEXT

Adverse climatic conditions are important considerations in planning and conducting site operations. High ambient temperature can result in deleterious health effects ranging from transient heat fatigue, physical discomfort, reduced efficiency, personal illness, increased accident probability, to serious illness or death. Heat stress is of particular concern when chemical protective garments are worn, since these garments prevent evaporative body cooling thereby placing employees at considerably higher risk of developing heat stress.

Heat stress is caused by a number of interacting environmental and personal risk factors. Environmental risk factors include air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, and personal protective equipment and clothing. Personal risk factors include age, degree of acclimatization, overall health, water consumption, alcohol consumption, caffeine consumption and use of prescription or over-the-counter drugs that affect the body's water retention or other physiological responses to heat. Because heat stress is a common and potentially serious occupational illness, regular monitoring and other preventive precautions are vital.

5.1 **Signs, Symptoms, and First Aid** (American Red Cross, First Aid /CPR/AED for the Workplace, 2006)

Employees must immediately report to the site supervisor or to the site safety officer any symptoms or signs of heat illness experienced by themselves or observed in co-workers. Regardless of the worker's protests, no employees with any symptoms of possible serious heat illness should be sent home or left unattended without medical assessment and authorization.

5.1.1 Heat Rash

Heat rash can be caused by continuous exposure to hot and humid air and skin abrasion from sweat soaked clothing.

Signs and Symptoms: The condition is characterized by a localized red skin rash and reduced sweating. Aside from being a nuisance, the ability to tolerate heat is reduced.

First Aid: Remove clothing from affected area. Wash skin with mild soap and water clean and allow it to dry thoroughly.

5.1.2 Heat Cramps

Heat cramps are caused by profuse perspiration with inadequate electrolytic fluid replacement. This often robs the larger muscle groups (abdominal and quadriceps) of blood which can cause painful muscle spasms and pain.

Signs and Symptoms: Muscle spasms and pain in the extremities and abdomen.

First Aid: Remove worker to a cool place and give sips of cool water. Watch for signs of heat exhaustion or stroke.

5.1.3 Heat syncope (fainting)

Heat syncope is a loss of consciousness because of low blood pressure. Heat causes the blood vessels to expand (dilate), so body fluid moves into the legs by gravity, which causes low blood pressure and may result in fainting. Heat syncope can be caused by blood pooling in the legs after standing still for a long time in a hot environment. It can also be caused after vigorous physical activity for two or more hours. The risk of heat syncope is higher among those who are not acclimated and to those who are dehydrated.

Signs and Symptoms: Feeling faint or lightheaded; pale, cool, and moist skin;
lightheadedness when changing position, such as moving from a lying position to a standing position.

First Aid: Remove worker to a cool, shaded place. Give sips of cool water. Loosen tight clothing. Remove perspiration soaked clothing. Place the worker in a seated or supine position with legs raised. Apply cool, wet towels to the skin. Fan the person. Watch for signs of heat stroke.

5.1.4 Heat Exhaustion

Heat exhaustion (early stage) is an early indicator that the body's cooling system is becoming overwhelmed.

Signs and Symptoms: Cool, moist, pale, ashen or flushed skin, headache, nausea, dizziness, weakness, exhaustion, heavy sweating.

First Aid: Remove worker to a cool, shaded place. Give sips of cool water. Remove all personal protective equipment. Loosen tight clothing. Remove perspiration soaked clothing. Place the worker in a seated or supine position with legs raised. Apply cool, wet towels to the skin. Fan the person. Watch for signs of heat stroke.

5.1.5 Heat Stroke

Heat stroke is when the body's systems are overwhelmed by heat and stop functioning. Heat stroke is a life-threatening condition.

Signs and Symptoms: Red, hot, dry skin, changes in the level of consciousness, vomiting. **This is a true medical emergency! Call 911 immediately.**

First Aid: Move worker to a cool, shaded place. Remove all personal protective equipment. Loosen tight clothing. Remove perspiration soaked clothing. Place the worker in a seated or supine position with legs raised. Apply cool, wet towels to the skin. Fan the person. If the person is conscious, give small amounts of cool water to drink. If the person refuses water, vomits or starts to lose consciousness, place the person on his or her side continue to cool the person by using ice or cold packs on their wrists, ankles, groin and neck, and in the armpits. Continue to check breathing and signs of life (coughing or movement in response to rescue breaths of a pulse.)

5.1.6 Emergency Planning

The site specific health and safety plan and/or job safety analysis must specify the site specific procedures for how emergency medical services will be provided, how to contact emergency medical services, and how emergency responders will be directed to the work site.

5.2 Prevention

The prevention of heat-related illnesses requires adequate hydration, nutrition, acclimatization, access to shade if heat stress symptoms appear, monitoring and in some cases the use of cooling devices.

5.2.1 Hydration

During periods of high heat, adequate liquids must be provided to replace lost body fluids. Most people do not become aware of thirst until they have lost 1 to 2 liters of body water. Highly motivated workers may incur losses of 3 to 4 liters before extreme thirst forces them to stop and drink. Therefore, workers must drink more than the amount required to satisfy thirst. Prehydration, the consuming of a large drink of water immediately before the start of heat exposure, is highly recommended.

In California, workers potentially exposed to heat stress in outdoor work sites are required to have ready and easy access to potable water or liquid sufficient to provide one quart per employee per hour (Title 8, California Code of Regulations, Section 3395, Heat Stress Prevention). Replacement fluids may include commercial "sports drinks" or "thirst quenchers", or a combination of these with fresh water. However, drinks that are popular because they "cut" thirst are not recommended, because they inhibit intake before rehydration is complete. For this reason it is better to drink water or dilute flavored beverages and to avoid carbonation, caffeine and drinks with heavy concentrations of sugar or salt.

The replacement fluid temperature should be kept cool, 50°F to 60°F, and must be located within a few steps of each worker or brought to the worker every hour or more frequently under the most stressful conditions.

Alcohol is a common and serious problem among those who work in heat. Alcohol not only impairs intake of food and water, but also acts as a diuretic (increase in urination) and disturbs judgment. The adverse effects of alcohol extend many hours beyond the time of intake. Alcoholics who suffer heat stroke have a far higher mortality rate than non-alcoholic patients.

5.2.2. Nutrition

It is important to eat well-balanced meals and to avoid candy bars or snack foods, which lack important nutritional components. High sweat rates involve a continuous loss of sodium chloride and small amounts of potassium, which must be replaced on a daily basis. In addition, work in heat accelerates the turnover of trace elements including magnesium and zinc. All of these essential elements should normally be obtained from wholesome food.

Do not consume salt tablets, as they are easily abused, and overdoses lead to gastro-intestinal problems, increased urine output and greater susceptibility to heat illness.

5.2.3 Acclimatization

Acclimatization can greatly expand human tolerance to heat, so that work becomes easier after a period of gradual adjustment. Individuals with a high level of physical fitness generally display partial heat acclimatization and are able to complete the process more quickly and with less stress than sedentary persons. Season may also affect the time which must be allowed for acclimatization. Workers recruited in summer may already be partly heat acclimatized, while winter hires will require a longer period of adjustment.

Acclimatization for heavy work under extremely hot conditions may require a period of 4 to10 days of progressively increasing work time starting with about 2 hours work per day. For less severe conditions, the first 2 to 3 days of work in the heat should be limited to 2 to 4 hours. Employees undergoing acclimatization need to be monitored closely for signs and symptoms of heat illness.

Maintenance of full heat acclimatization requires exposure to work in heat three to four times per week; lower frequency or passive exposure to heat have a much weaker effect and may allow gradual decay of heat tolerance. However, weekends off work have no measurable effect on acclimatization. Discontinuing exposure for 2 to 3 weeks will cause loss of most acclimatization, although some will be retained in persons exposed to hot weather and/or regular aerobic exercise.

5.2.4 Access to Shade

Employees suffering from heat illness or believing a recovery period is needed will be provided access to an area with shade that is either open to the air or provided with ventilation for cooling for a period of no less than 5 minutes. Access to shade will be permitted at all times. **Employees will remove chemical protective garments during rest periods and will not be assigned other tasks during rest periods**.

5.2.5 Cooling devices

Vortex tubes or cooling vests may be worn beneath impermeable clothing. If cooling devices are worn, only physiological monitoring will be used to determine work activity.

5.3 Monitoring

Susceptibility to heat stress depends on numerous factors including ambient temperature, humidity, radiant heat, air movement, personal protective equipment, the degree of acclimatization, and physical condition of the individual workers. Therefore, the decision to start either environmental or physiological heat stress monitoring must be based the experience and observations of the site safety officer and on the professional judgment of the HS manager and in consideration of the guidelines summarized below. **However, on all job sites having potential heat stress conditions, the monitoring of site workers by watching for the signs and symptoms of heat stress (see section 5.1 above) must be ongoing by supervisors, site safety officers, and the workers themselves.**

5.3.1 Environmental Monitoring (American Conference of Governmental

Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), most recent edition.)

The Wet Bulb Globe Temperature (WBGT) index is the simplest and most suitable technique to evaluate the environmental heat stress factors. If employees are performing moderate to heavy physical work on construction/remediation sites in standard permeable cotton or synthetic work clothing, heat stress monitoring is advisable when the ambient air temperature exceeds 90°F and any time discomfort due to heat stress is either noticed or reported. Either the WBGT index or physiological monitoring may be used. When WBGT exceeds 25.9°C (78°F), the work regiment in Table 2 of the ACGIH TLV/BEI booklet should be followed. **Note: WBGT measurements are not designed for and should not be used to assess heat stress involving the use of semi permeable or impermeable protective clothing**.

5.3.2 Physiological Monitoring (NIOSH/OSHA/USCG/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, 1985)

The advantage of physiological monitoring is that it determines each individual's unique response to environmental heat stress factors. If employees are wearing impermeable protective clothing physiological monitoring is advisable beginning at an ambient air temperature of 70°F and/or any time discomfort due to heat stress is either noticed or reported. Physiological monitoring may be performed by the site safety officer. Alternatively, it may be self-performed if the affected employees have been trained to do so. The two parameters that are to be monitored at the beginning of each rest period are:

- Heart Rate - Radial (wrist) pulse will be determined as early as possible during each rest period. Monitoring consists of taking the radial pulse of a worker for 30 seconds immediately after exiting the work area. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by 1/3 and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, increase the following rest period by 1/3. The initial rest period should be at least 5 minutes.

- Body Temperature - Each individual will measure his/her oral temperature with a disposable thermometer for one minute or with an electronic aural device as early as possible in the first rest period. If the temperature exceeds 99.6°F at the beginning of the rest period, then the work cycle will be decreased by one-third with the rest period remaining the same. Return to work is not permitted if body temperature exceeds 100.4°F. Note: Some aural temperature devices, which are also known as ear canal or tympanic devices, will not work accurately in high intensity ambient light.

Attachment 2 will be used to record the results of heat stress monitoring.

5.4 Training

Employees potentially exposed to heat stress conditions will be trained on the contents of this procedure. This training may be conducted during daily tailgate safety meetings. Training topics and attendance must be documented.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS045 Job Safety Analysis
HS051 Tailgate Safety Meetings
HS052 Health and Safety Plans

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Heat Stress Monitoring Record

ATTACHMENT 1
HEAT STRESS

Responsibility Matrix

Action	Procedure Section	*Responsible Party*			
		Director of Health and Safety	**Project Supervisor**	**Site Safety Officer**	**All Site Workers**
Issuance, Revision, and Maintenance of Procedure	3.1	X			
Immediately report symptoms or signs of heat illness in themselves or others to the site supervisor or safety officer	5.0				X
Conduct Monitoring	5.3			X	
Inform Employees About Procedure	5.4		X	X	

ATTACHMENT 2
HEAT STRESS MONITORING RECORD

Project/Location ________________________________ Date ____________________

Employee Name	Initial Reading Time	First Work Period Time		Second Work Period Time		Third Work Period Time		Fourth Work Period Time		Fifth Work Period Time		Sixth Work Period Time	
	WBGT ($^{\circ}$F)	WBGT ($^{\circ}$F)		WBGT ($^{\circ}$F)		WBGT ($^{\circ}$F)		WBGT ($^{\circ}$F)		WBGT ($^{\circ}$F)		WBGT ($^{\circ}$F)	
	Air Temp. ($^{\circ}$F)	Air Temp. ($^{\circ}$F)		Air Temp. ($^{\circ}$F)		Air Temp. ($^{\circ}$F)		Air Temp. ($^{\circ}$F)		Air Temp. ($^{\circ}$F)		Air Temp. ($^{\circ}$F)	
	Initial Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.
	Initial H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.
	Initial Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.
	Initial H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.
	Initial Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.
	Initial H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.
	Initial Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.	Initial Temp.	Final Temp.
	Initial H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.	Initial H.R.	Final H.R.

Enclosure 3
Field Forms

(Job Safety Analysis/Tailgate Safety Meeting Combination Form,
Project Safety Inspection Report)

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Shaw The Shaw Group Inc.

JOB SAFETY ANALYSIS
TAILGATE SAFETY MEETING
COMBINATION FORM

JOB#:

JSA Date:

Date Revised:

Project name: Client: Preparer(s): EMERGENCY INFO (list below or attach) Hospital Name: Address: Phone: Ambulance Phone: Emergency Evacuation route: Assembly point:	ACTIVITY DESCRIPTION: Supervisor: Initials: Time of inspection: Comments:
Initial Required PPE:	

PRINCIPLE TASKS, STEPS	POTENTIAL HEALTH/SAFETY HAZARDS	RECOMMENDED CONTROLS

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS

Tailgate Safety Meeting Conducted by: Date: Time:

OTHER TOPICS DISCUSSED:	ATTENDEES' Printed Names	ATTENDEES' Signatures

PROJECT SAFETY INSPECTION REPORT

DATE _____

BUSINESS LINE: _____

PROJECT NAME/NUMBER: _____

PROGRAM MANAGER: _____ PROJECT MANAGER: _____

GENERAL PROJECT DESCRIPTION: _____

SITE ACTIVITIES AT TIME OF INSPECTION: _____

_____

_____

INTERVIEWED EMPLOYEE: _____

SAFETY ISSUE: _____

CORRECTIVE ACTION: _____

_____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____

CORRECTION VERIFIED BY: _____ DATE: _____

INTERVIEWED EMPLOYEE: _____

SAFETY ISSUE: _____

CORRECTIVE ACTION: _____

_____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____

CORRECTION VERIFIED BY: _____ DATE: _____

INSPECTION COMPLETED BY: _____ DATE: _____

HEALTH AND SAFETY REVIEW BY: _____ DATE: _____

PROJECT SAFETY INSPECTION REPORT

PROJECT _____ **DATE** _____

	YES	NO	N/A
FIRST AID			
1. Are first aid kit locations identified and accessible?			
2. Are emergency eye wash/safety showers available and inspected monthly?			
3. Are first aid kits inspected weekly?			
4. Is a qualified first aid/CPR provider on-site?			
PERSONAL PROTECTIVE EQUIPMENT			
1. Have levels of personnel protection been established?			
2. Are respirators decontaminated, inspected, and stored according to standard procedures?			
3. Have employees been fit-tested?			
4. Is defective personal protective equipment tagged and taken out of service?			
5. Does compressed breathing air meet CGA Grade "D" minimum?			
6. Are there sufficient sizes and quantities of protective equipment?			
7. At a minimum, are employees utilizing safety glasses, hard hats, and steel toe boots?			
FIRE PREVENTION			
1. Are employees smoking only in designated outdoor areas?			
2. Are fire lanes established and maintained?			
3. Are flammable liquid dispensing systems bonded?			
4. Are approved safety cans available for storage of flammable liquids?			
5. Has the local fire department been contacted?			
6. Are fire extinguishers available and inspected monthly?			
7. Are flammables and combustibles properly stored?			
8. Are flammable storage cabinets available and used when needed?			
AIR MONITORING			
1. Is required air monitoring being conducted?			
2. Are air monitoring instruments calibrated daily?			
3. Are air monitoring logs up to date?			
4. Are instrument user manuals available?			
5. Are instruments being maintained?			
6. Are employees notified of personal sampling results within 5 days of receipt?			
WELDING AND CUTTING			
1. Are fire extinguishers present at welding and cutting operations?			
2. Are confined spaces evaluated prior to and during cutting and welding operations?			
3. Have Hot Work Permits been completed?			
4. Are proper helmets, goggles, aprons, and gloves available for welding and cutting operations?			
5. Are welding machines properly grounded?			
6. Are oxygen and fuel gas cylinders stored a minimum of 20 feet apart?			
7. Are only trained personnel permitted to operate welding and cutting equipment?			
8. Are gas cylinders transported in a secured vertical position with caps in place?			
HAND AND POWER TOOLS			
1. Are defective hand and power tools tagged and taken out of service?			
2. Is eye protection available and used when operating power tools?			
3. Are guards and safety devices in place on power tools?			
4. Are power tools inspected before each use?			
5. Are nonsparking tools available when necessary?			

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PROJECT SAFETY INSPECTION REPORT

PROJECT _____ **DATE** _____

	YES	NO	N/A
HAND AND POWER TOOLS (continued)			
6. Is the correct tool being used for the job?			
MOTOR VEHICLES			
1. Are vehicles regularly inspected?			
2. Are personnel licensed for the vehicles they operate?			
3. Are unsafe vehicles tagged and reported to supervision?			
4. Is vehicle's safety equipment operating properly?			
5. Are loads secure?			
6. Are vehicle occupants using safety belts?			
7. Are current insurance cards and blank accident report forms located in vehicles?			
EMERGENCY PLANS			
1. Are emergency telephone numbers posted?			
2. Have emergency escape routes been designated?			
3. Are employees familiar with the emergency signal?			
4. Has the emergency route to the hospital been established and posted?			
5. Is a vehicle on site that can transport injured employees to the hospital?			
MATERIALS HANDLING			
1. Are materials stacked and stored to prevent sliding or collapsing?			
2. Are tripping hazards identified?			
3. Are semi-trailers chocked?			
4. Are fixed jacks used under semi-trailers?			
5. Are riders prohibited on materials handling equipment?			
6. Are approved manlifts provided for the lifting of personnel?			
7. Are personnel in manlifts wearing approved fall protection devices?			
FIRE PROTECTION			
1. Has a fire alarm system been established?			
2. Do employees know the location and use of all fire extinguishers?			
3. Are fire extinguisher locations posted?			
4. Are combustible materials segregated from open flames?			
5. Have fire extinguishers been professionally inspected during the last year?			
6. Are fire extinguishers visually inspected monthly?			
ELECTRICAL			
1. Is electrical equipment and wiring properly guarded and maintained in good condition?			
2. Are extension cords kept out of wet areas?			
3. Is damaged electrical equipment tagged and taken out of service?			
4. Have underground electrical lines been identified by proper authorities?			
5. Has a lockout/tagout system been established?			
6. Are GFCIs being used on all temporary electrical systems and as needed?			
7. Are extension cords being inspected daily (i.e., group pin in place, no unapproved splices)?			
8. Are warning signs exhibited on high voltage equipment (250V or greater)?			
9. Is adequate distance maintained from overhead electrical lines?			
10. Are switches, circuit breakers, and switchboards installed in wet locations enclosed in weatherproof enclosures?			

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PROJECT SAFETY INSPECTION REPORT

PROJECT _____ **DATE** _____

	YES	NO	N/A
CRANES AND RIGGING			
1. Are cranes inspected daily prior to use?			
2. Are crane swing areas barricaded or demarked?			
3. Is all rigging equipment tagged with an identification number and rated capacity?			
4. Is rigging equipment inspection documented?			
5. Are slings, chains, and rigging inspected before each use?			
6. Are damaged slings, chains, and rigging tagged and taken out of service?			
7. Are slings padded or protected from sharp corners?			
8. Do employees keep clear of suspended loads?			
9. Are rated load capacities and special hazard warnings posted on crane?			
10. Are the records of annual crane inspection available?			
11. Has accessible areas within the swing radius of the rear of the crane been barricaded?			
12. Do crane operators have required training/certification?			
COMPRESSED GAS CYLINDERS			
1. Are breathing air cylinders charged only to prescribed pressures?			
2. Are like cylinders segregated and stored in well-ventilated areas?			
3. Is smoking prohibited in cylinder storage areas?			
4. Are cylinders stored secure and upright?			
5. Are cylinders protected from snow, rain, etc.?			
6. Are cylinder caps in place before cylinders are moved?			
7. Are fuel gas and oxygen cylinders stored a minimum of 20 feet apart?			
8. Are propane cylinders stored and used only outside of buildings?			
SCAFFOLDING			
1. Is scaffolding placed on a flat, firm surface?			
2. Are scaffold planks free of mud, ice, grease, etc.?			
3. Is scaffolding inspected before each use?			
4. Are defective scaffold parts taken out of service?			
5. Have employees completed scaffold user training?			
6. On scaffolds where platforms are overlapped, is planking overlapped a minimum of 12 inches?			
7. Does scaffold planking extend over end supports between 6 to 18 inches (dependent upon platform length)?			
8. Are employees restricted from working on scaffolds during storms and high winds?			
9. Are all pins in place and wheels locked?			
10. Is required perimeter guarding (top rail, mid rail, and toe board) present?			
11. Has a competent person been designated to oversee scaffold construction?			
12. Are employees prohibited from moving mobile scaffold horizontally while employees are on them?			
13. Are all scaffold components manufactured by the same company?			
WALKING AND WORKING SURFACES			
1. Are ladders regularly inspected?			
2. Are accessways, stairways, ramps, and ladders clean of ice, mud, snow, or debris?			
3. Are ladders being used in a safe manner?			
4. Are ladders kept out of passageways, doors, or driveways?			
5. Are broken or damaged ladders tagged and taken out of service?			
6. Are metal ladders prohibited in electrical service?			

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WALKING AND WORKING SURFACES (continued)			
7. Are stairways and floor openings guarded?			
8. Are safety feet installed on straight and extension ladders?			
9. Is general housekeeping being maintained?			
10. Are ladders tied off?			
11. Are handrails and side rails installed along the unprotected sides of stairways having 4 or more risers or rising more than 30 inches?			
SITE SAFETY PLAN			
1. Is a site safety plan available on site or accessible to all employees?			
2. Does the safety plan accurately reflect site conditions and tasks?			
3. Have potential hazards been described to employees on site?			
4. Is there a designated safety official on site?			
5. Have all employees signed the safety plan acknowledgment form?			
SITE POSTERS			
1. Are the following posters displayed in a prominent and accessible area?			
A. Minimum Wage			
B. OSHA Job Protection			
C. Equal Employment Opportunity			
2. Are all required state-specific posters displayed?			
SITE CONTROL			
1. Are work zones clearly marked?			
2. Are support trailers located to minimize exposure from a potential release?			
3. Are support trailers accessible for approach by emergency vehicles?			
4. Is the site properly secured during and after work hours?			
5. Is an exclusion zone sign-in/sign-out log maintained?			
6. Are only employees with current training and physicals permitted in exclusion zone?			
HEAVY EQUIPMENT			
1. Is heavy equipment inspected as prescribed by the manufacturer?			
2. Is defective heavy equipment tagged and taken out of service?			
3. Are project roads and structures inspected for load capacities and proper clearances?			
4. Is heavy equipment shut down for fueling and maintenance?			
5. Are backup alarms installed and working on mobile equipment?			
6. Have qualified equipment operators been designated?			
7. Are riders prohibited on heavy equipment?			
8. Are guards and safety appliances in place and used?			
9. Are operators using the "three point" system when mounting/dismounting equipment?			
EXCAVATION			
1. Has a "competent person" been designated to oversee excavation activities?			
2. Prior to opening excavations, are utilities located and marked?			
3. Has a professional engineer evaluated all excavations greater than 20 feet deep?			
4. Is there rescue equipment on site and accessible to the excavation area?			
5. Is excavated material placed a minimum of 24 inches from the excavation?			
6. Are the sides of excavations sloped or shored to prevent cave ins?			
EXCAVATION (continued)			
7. Have excavations greater than 4 feet deep been monitored for hazardous atmospheres (i.e., LEL/O_2 deficiency)?			
8. Are ladders or ramps used in excavations over 4 feet deep?			
9. Are means of egress available so as to require no more than 25 feet of lateral travel?			

PROJECT SAFETY INSPECTION REPORT

PROJECT _____ **DATE** _____

	YES	NO	N/A
10. Are barriers, i.e., guardrails or fences, placed around excavations near pedestrian or vehicle thoroughfares?			
11. Is excavation inspected daily by competent persons and documented?			
CONFINED SPACES			
1. Have employees been trained in the hazards of confined spaces?			
2. Are confined space permits posted at entrance to confined space?			
3. Is a copy of the confined space entry procedure available?			
4. Has a rescue plan been established?			
5. Is an entry supervisor present at each permit-required entry?			
6. Are required extraction/fall protection devices being used?			
DECONTAMINATION			
1. Are decontamination stations set up on site?			
2. Is decontamination water properly contained and disposed of?			
3. Are all pieces of equipment inspected for proper decontamination before leaving the site?			
4. Are shin/metatarsal guards being used during power washing activities?			
HAZARD COMMUNICATION			
1. Is there a copy of the HAZCOM procedure on site?			
2. Are their MSDSs for required materials/chemicals present on site?			
3. Are all containers properly labeled, as to content, hazard?			
4. Have employees been trained in accordance with the HAZCOM procedure?			
5. Do employees (including subcontractors) know and understand the effects of exposure from the chemicals on site?			
6. Have all personnel signed the HAZCOM acknowledgment form?			
7. Is there an updated list of chemicals maintained on site?			
TRAINING			
1. Are tailgate safety meetings being conducted daily?			
2. Are current training/medical records maintained on site?			
DOCUMENTATION			
1. Is an OSHA 300 Log maintained on site and posted during the months of February, March, and April?			
2. Are accident report forms available?			
3. Is a copy of health and safety policy and procedures available on site?			

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PROJECT SAFETY INSPECTION REPORT

PROJECT_____ **DATE** _____

ALL NEGATIVE RESPONSES	CORRECTIVE ACTION	ASSIGNED TO	DATE ASSIGNED	DATE COMPLETED	VERIFIED BY

DESCRIBE POSITIVE SAFETY OBSERVATIONS

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Enclosure 4
Site Safety and Health Plan Amendments

(Project-specific safety and health amendments, if written, will be provided as project progresses)

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Enclosure 5
Emergency Contact Information

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Emergency Phone Numbers

Contact	Phone Number
San Francisco Fire Department Emergency	911 (from land line)
San Francisco Police/Security Department Emergency	911 (from land line)
San Francisco HAZMAT Response Emergency	911 (from land line)
National Poison Referral Service	800.222.1222
Nearest Approved Urgent Care Medical Facility: Concentra Medical Center 2 Connecticut Street San Francisco, CA	415.648.9501 (phone) 415.648.9508 (fax)
Key Project and Shaw Personnel	
Shaw Project CIH: Fred Mlakar (FA and CPR trained)	949.660.5413 (office) 949.981.1450 (mobile)
Shaw Project Manager: John Baur	925.288.2019 (office) 925.382.3051 (mobile)
Site Superintendent: Jim Click (FA and CPR trained)	415.822.2053 (office) 303.345.8998 (mobile)
Site Safety and Health Officer: Mark Vennemeyer (FA and CPR trained)	925.288.2383 (office) 925.383.6502 (mobile)
Alternate Site Safety and Health Officer: Mark Egan (FA and CPR trained)	415.822.1223 (office) 925.321.6169 (mobile)
Occupational Physician: Dr. William Nassetta, MD	225.756.2673 (office) 225.295.4846 (fax)
Medical Incident Reporting: CORE Health Services	877.347.7429
The Shaw Group Help Desk	866.299.3445

Notes:

CIH	*Certified Industrial Hygienist*
CPR	*cardiopulmonary resuscitation*
FA	*first aid*
HAZMAT	*hazardous materials*
MD	*medical doctor*

Enclosure 6
Accident Prevention Program: Reporting, Investigation, and Review Procedure (HS020)

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STANDARD OPERATING PROCEDURE

Subject: Accident Prevention Program: Reporting, Investigation, And Review

UNCONTROLLED WHEN PRINTED

1. PURPOSE

The purpose of this procedure is to establish the requirements for incident reporting, investigation, and review. This procedure is an integral part of the company's overall accident prevention program and aids in the identification of potential causal factors and corrective actions.

2. SCOPE

This procedure applies to all occupational injuries, illnesses, accidents, and near miss incidents having the potential for injury; all losses or damage to company property in excess of $2,500; and any third party property damage resulting from company activities.

Variances and exceptions may be requested pursuant to the provisions of Shaw E&I Procedure No. HS013, "Health and Safety Procedure Variances."

3. REFERENCES

- Shaw E&I Procedure No. CORPHR207, Employee Discipline
- Shaw E&I Procedure No. HS013, Health and Safety Procedure Variances
- Shaw E&I Procedure No. HS101, Drug and Alcohol Testing
- Shaw E&I Procedure No. HS800, Motor Vehicle Operations - General Requirements
- Shaw E&I Procedure No. HS810, Commercial Motor Vehicles
- Shaw E&I Procedure No. HS045 Job Safety Analysis

4. DEFINITIONS

- **Chargeable Vehicle Accident**—Any **at-fault** vehicle accident meeting any **one** of the following criteria:
  - An individual other than an employee of the company is a party in the accident
  - Property owned by a person or entity other than the company is damaged
  - When company owned, leased, or rented vehicles are involved and damage exceeds $2,500.00.
  - When an employee is driving a personal vehicle while on company business and damage exceeds $2,500.00.
- **Company**—All affiliates, indirect and wholly owned subsidiaries of Shaw E&I.
- **Days Away From Work**—Days away from work are the number of **calendar** days following the injury or illness, excluding the date of the injury.
- **Job Safety Analysis (JSA)**—The JSA is an effective management technique for identifying hazardous conditions and unsafe acts in the workplace. A JSA is intended to analyze the

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individual steps or activities, which together create a job or specific work duty, and to detect any actual or potential hazards that may be present (Shaw E&I Procedure No. HS045, "Job Safety Analysis").

- **Restricted Work**—Occurs when, as the result of a work-related injury or illness: A physician or other licensed health care professional recommends that the employee not perform one or more of the routine functions of his or her job, or not work the full workday that he or she would otherwise have been scheduled to work.
- **Near Miss Incident**—Any incident where no injury occurred, but where the potential for injury existed.
- **OSHA Recordable Case**—See Attachment 1, "Injury/Illness Classification Guidelines."
- **Vehicle**—Any passenger vehicle, including trucks, used upon the highway or in private facilities for transporting passengers and/or property. For the purpose of this procedure, off-road vehicles such as earthmoving equipment, forklifts, non-highway use trucks, *etc.*, are not considered vehicles (see Shaw E&I Procedure No. HS800, "Motor Vehicle Operation: General Requirements").

5. RESPONSIBILITIES

5.1 Procedure Responsibility

The Executive Director of Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

5.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 2, "Accident Prevention Program: Reporting, Investigation, and Review Responsibility Matrix."

6. PROCEDURE

Key elements of this procedure are as follows:

- All occupational injuries/illnesses, vehicle accidents, and near miss incidents must be promptly reported and investigated.
- All Occupational Safety and Health Administration (OSHA) recordable injuries/illnesses and chargeable vehicle accidents must be reviewed by an Accident Review Board. The Accident Review Board report is submitted to the Baton Rouge Shaw Environmental & Infrastructure, Inc. (Shaw E&I) Safety Department, for production to and retention on behalf of the Legal Department.
- All incidents involving a fatality, major injury/illness, or resulting in significant property damage will be immediately reported to the business line Health & Safety Manager, the Baton Rouge Shaw E&I Safety Department, Business Line Vice President, and the Legal Department.
- All investigations and associated materials obtained and/or produced, in association with OSHA recordable injuries/illnesses, chargeable vehicle accidents, fatalities, major injury/illness, or incidents resulting in significant property damage, are to be performed for and on behalf of the legal department and will be subject to being classified as Confidential Attorney-Client/Attorney Work Product.

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6.1 Incident Reporting Process

Employees are required to immediately report to their direct supervisor all occupational injuries, illnesses, accidents, and near miss incidents having the potential for injury. Site Business Line Managers or Supervisors (supervisor directly responsible for the employee involved in the incident) with first-hand knowledge of an incident are required to:

- Immediately arrange for appropriate medical attention and notify the responsible health and safety representative.
- **As soon as practical, but not longer than one hour after gaining knowledge of the occurrence**, notify the Shaw E&I Notification Hotline/Helpdesk by calling 1-866-299-3445 (Attachment 3, "Help Desk / Hotline Notification Guidelines") of any injury requiring off-site medical treatment, all vehicle accidents, equipment incidents involving property damage exceeding $2,500 in value (Shaw E&I or third party), criminal activity, explosions or fires with property damage exceeding $2,500 in value, environmental spills/releases, fatalities, or any utility line strikes.
- Inform CORE Health Networks of all incidents requiring off-site medical attention by calling 1-877-347-7429. This call should be made **prior** to transporting the employee such that they can coordinate physicians services prior to the arrival of the employee to the clinic, and provide the following information:
  - Company name (Shaw E&I) and business line (*e.g.*, Federal, Commercial)
  - Employee name
  - Name of anticipated, treating medical facility and phone number
  - Brief description of incident

  CORE Health Network's role is to interface with the treating physician, to ensure that appropriate care is provided to the injured employee.
- Complete the Authorization for Treatment, Release of Medical Information, and Return to Work (Forms EI-HS020.1 through EI-HS020.3) and the Supervisor's Employee Injury Report (Form EI-HS020.4) for all cases requiring off-site medical attention. The Site Safety and Health Representative or responsible supervisor shall ensure that the forms are completed and faxed to CORE Health Networks at 225-295-4846 prior to leaving the medical facility or as soon as reasonably possible.
- Post accident drug and alcohol testing shall occur in accordance with Shaw E&I Procedure No. HS101, "Drug and Alcohol Testing," immediately following an incident.
- Prior to an injured employee returning to his/her job duties, a follow-up call by CORE Health Networks will be made to the project site. The purpose of this call is to ensure work restrictions are clarified and planned work activities are consistent with medical recommendations.

The Supervisor shall initiate/complete the appropriate company documentation in accordance with the following incident classifications (note: if a Site Safety and Health Representative is on site, he/she should work in concert with the supervisor):

- OSHA Recordable Cases
  - Supervisor's Employee Injury/Illness Report (Form EI-HS020.4)
  - Incident Investigation Report (Form EI-HS020.5)
  - Witness Statement form (Form EI-HS020.6)

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  - Accident Review Board (Form EI-HS020.7)
- First Aid Cases
  - Supervisor's Employee Injury/Illness Report (Form EI-HS020.4)
  - Incident Investigation Report (Form EI-HS020.5)
  - Witness Statement form (Form EI-HS020.6)
- Chargeable Vehicle Accidents
  - Vehicle Accident Report (Form EI-HS020.8)
  - Incident Investigation Report (Form EI-HS020.5)
  - Witness Statement form (Form EI-HS020.6)
  - Accident Review Board (Form EI-HS020.7)
  - Driving Record Certification (Shaw E&I Procedure No. HS800)
- Non-Chargeable Vehicle Accidents
  - Vehicle Accident Report (Form EI-HS020.8)
  - Incident Investigation Report (Form EI-HS020.5)
  - Witness Statement form (Form EI-HS020.6)
- Equipment, Property Damage and General Liability Incidents
  - Incident Investigation Report (Form EI-HS020.5)
  - Employee Witness Statement form (Form EI-HS020.6)
  - Equipment, Property Damage and General Liability Loss Report (Form EI-HS020.9).
- Near Miss
  - Incident Investigation Report (Form EI-HS020.5)

6.2 Supervisor's Employee Injury/Illness Report (Form EI-HS020.4)

The Supervisor's Employee Injury Report is to be completed for all incidents that result in an employee occupational injury or illness requiring off-site medical attention. It is to be initiated by the supervisor of the injured employee and forwarded to the respective Business Line Safety Manager for review/comments. Upon completion of review and comments the report should be forwarded, **within 24 Hours,** to the Shaw Corporate Claims department in Baton Rouge, via the corporate claims fax number (225-932-2636).

6.3 Vehicle Accident Report (Form EI-HS020.8)

The Vehicle Accident Report must be completed for any vehicle accident in which a company vehicle is involved. This includes company-owned or leased, rental, and personal vehicles being used for company business. This report is to be initiated by both the employee involved in the accident and his/her direct supervisor and forwarded to the respective Business Line Safety Manager for review/comments. Upon completion of review and comments the report should be forwarded to the Shaw Corporate Claims department in Baton Rouge (fax number 225-932-2636).

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6.4 Equipment, General Liability, Property Damage, and Loss Report (Form EI-HS020.9)

The General Liability, Property Damage, and Loss Report is to be used for all losses or damage to company property in excess of $2,500.00. This form must be completed for all third party property, regardless of value, damaged as a result of company activities. The employee most familiar with the events that contributed to the loss or damage will complete the form, and then forward it to the project/location manager. The Corporate Claims Department and the respective Business Line Safety Manager must receive a copy of the report within one business day of the incident.

6.5 Incident Investigation Report (Form EI-HS020.5)

All injuries, illnesses, accidents, and near miss incidents will be investigated. Once arrangements for immediate medical care have been made, the employee's direct supervisor, with assistance from the health and safety representative and Business Line Health and Safety Manager, will:

- Collect the facts:
  - Describe and document (include sketch, photos, *etc.*) how the incident occurred
  - Collect support documentation (JSAs, Activity Hazard Analyses (AHA), Tailgate Safety Meetings, Work Orders, etc.)
  - List witnesses and collect written statements
- If applicable, contact the employee's Functional Manager in an effort to gain relevant information:
  - Identify the causative factors
  - Identify potentially unsafe acts or unsafe conditions that may have contributed to the incident
  - Identify potential curative action
  - List the corrective actions that are to be executed, appropriate curative action, the person(s) responsible for the corrective action, and the date by which action is to be completed

The investigation will be started as soon as possible following the incident, and the relevant reports and support documentation (JSAs, AHAs, Tailgate Safety Meetings, Work Orders, etc.) shall be submitted to the appropriate Business Line Health and Safety Manager within 72 hours. In addition to the previous information, reports from external sources (police, insurance carriers, testing laboratories, etc.) are to be obtained as soon as they become available and forwarded by the Business Line Safety Manager to the Corporate Claims department in Baton Rouge.

6.6 Injured Employee Statement and Witness Statement Forms (Forms EI-HS020.10 and EI-HS020.6, respectively)

The Injured Employee and Witness Statement Forms allow for consistency in the development of the investigation process. The Injured Employee Statement must be completed in all cases where an employee injury results in off-site medical treatment. If there are witnesses to the accident/incident, the Witness Statement form should be completed and signed by the subject witness. Both of these forms should be attached to the incident investigation report. It is essential that these statements are executed immediately following the incident to ensure an accurate account of the events. The completion of these forms shall be done independently by the injured employee and/or witnesses; any collaboration of efforts is prohibited.

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6.7 Accident Review Board (Form EI-HS020.7)

The purpose of the Accident Review Board (ARB) is to collect and review the information gathered for each incident, report that information to the Legal Department, and take appropriate curative action. In all cases, the purpose of the entire investigative process, inclusive of conducting an ARB, is to identify curative actions as it relates to the incident/injury. Accordingly, a diligent and concerted effort to accomplish these tasks must be established at the onset of all of the subject incidents.

In order to assist the Legal Department in evaluating the risk to, or liability of, the company associated with OSHA recordable injuries, chargeable vehicle accidents, fatalities or incidents resulting in significant property damage, the responsible Project/Location Manager is required to coordinate with all parties and set up the ARB such that it occurs **within 10 days of the accident**. The respective Business Line Health and Safety Manager whose project/location experienced the accident is then required to conduct the subject ARB.

The ARB shall be composed of the project/location manager, the employee's direct supervisor (at time of incident), a health and safety representative, and the employee(s) involved in the incident.

Additionally, there may be cases that involve an employee that has been assigned to a project and the Functional Manager of that employee may not have direct knowledge of an incident. In cases such as these, the Functional Manager shall be notified of the incident and requested to participate in the ARB. Also, as determined by the Business Line Health and Safety Manager, a representative of other internal sources of expertise should be involved where applicable.

All investigations and associated materials obtained and/or produced in association with injuries/illnesses resulting in OSHA recordable classification, chargeable vehicle accidents, fatalities or incidents resulting in significant property damage, are to be performed for and on behalf of the legal department and will be subject to being classified as Confidential Attorney-Client/Attorney Work Product. If the ARB is initiated under a Confidential Attorney-Client/Attorney Work Product status, all documents and other work product arising out of, or associated with, the investigation process, including the ARB, shall be prepared in anticipation of litigation. The ARB report, and associated documents, is submitted to the Baton Rouge Shaw E&I Safety Department for production to and retention on behalf of the Legal Department.

The ARB report, and all associated documents, shall be completed as soon as practicable, but not more than five business days following the ARB meeting, and forwarded by the Business Line Safety Manager to the Baton Rouge Shaw E&I Safety Department, via the Corporate Claims fax number. The original documents shall then be mailed to the Baton Rouge Shaw E&I Safety Department. These documents shall then be filed in a lockable cabinet, separate from files not meeting the subject criteria, by the Baton Rouge Shaw E&I Safety Department, for production to and retention on behalf of the Legal Department. In the event that copies of these files are maintained by Business Line Health and Safety Managers and/or the respective location in which the injury occurred, the same filing criteria shall be followed. The criteria shall be that these documents are filed in lockable cabinets, separate from files not meeting the subject Attorney-Client/Attorney Work Product criteria.

It is generally not acceptable to discipline an employee for having an accident. However, if in the opinion of the ARB it is determined that the accident resulted from an intentional unsafe act or intentional violation of company procedure on the employee's part, the employee may be subject to disciplinary action in accordance with the company's progressive disciplinary action system (see Human Resources Procedure CORPHR207-Employee Discipline).

7. ATTACHMENTS

- Attachment 1, Injury/Illness Classification Guidelines

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- Attachment 2, Accident Prevention Program: Reporting, Investigation, And Review Responsibility Matrix
- Attachment 3, Help Desk / Hotline Notification Guidelines

8. FORMS

- Form EI-HS020.1, Authorization for Treatment of Occupational Injury/Illness
- Form EI-HS020.2, Authorization for Release of Medical Information
- Form EI-HS020.3, Return to Work Examination Form
- Form EI-HS020.4, Supervisor's Employee Injury/Illness Report
- Form EI-HS020.5, Incident Investigation Report
- Form EI-HS020.6, Employee Witness Statement
- Form EI-HS020.7, Accident Review Board Report
- Form EI-HS020.8, Vehicle Accident Report
- Form EI-HS020.9, Equipment, Property Damage and General Liability Loss Report
- Form EI-HS020.10, Injured Employee Statement

9. REVISION HISTORY AND APPROVAL

Revision Level / Revision Date	Revision Description	Responsible Manager
01 09/22/2010	Deleted requirement for Health & Safety Managers to prepare a monthly loss report. Changed all Health Resources references to CORE Health Networks. Revised attachment order and numbers to comply with the Standard Operating Procedure template requirements. Added requirement for independent completion of employee/witness statements. Revised and updated forms.	Troy Allen
00 07/16/2003	Initial Issue.	Troy Allen

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Attachment 1
Injury/Illness Classification Guidelines

First Aid Treatment – If the incident requires only the following types of treatment, consider it first aid. **Do Not** record the case if it involves only:

- Using non-prescription medications at non-prescription strength
- Administering tetanus immunizations
- Cleaning, flushing, or soaking wounds on the skin surface
- Using wound coverings such as bandages, Band-Aids™, gauze pads, *etc.*, or using SteriStrips™ or butterfly bandages
- Using hot or cold therapy
- Using any totally non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, *etc.*
- Using temporary immobilization devices while transporting an accident victim (slings, neck collars, or back boards)
- Drilling a fingernail or toenail to relieve pressure, or draining fluids from blisters
- Using eye patches
- Using simple irrigation or a cotton swab to remove foreign bodies not embedded in or adhered to the eye
- Using irrigation, tweezers, cotton swab or other simple means to remove splinters or foreign material from areas other than the eye
- Using finger guards
- Using massages
- Drinking fluids to relieve heat stress

Medical Treatment – Includes managing and caring for a patient for the purpose of combating disease or disorder. The following are **not** considered medical treatments and are not recordable:

- Visits to a doctor or Licensed Health Care Professional solely for the purpose of observation or counseling
- Diagnostic procedures, including administering prescription medications that are used solely for diagnostic purposes
- Any procedure that can be labeled first aid (see above descriptions)

OSHA Recordable Injuries and Illnesses

Work related injuries and illnesses that result in the following should be recorded on the OSHA 300 Log:

- Death
- Loss of consciousness
- Days away from work
- Restricted work activity or job transfer
- Medical treatment beyond first aid.

You must also record any **work related** injury or illness that involves cancer, chronic irreversible disease, a fractured or cracked bone, or a punctured eardrum.

Additional Recordable Criteria

You must also record the following conditions when they are work related:

- Any needle stick injury or cut from a sharp object that is contaminated with another person's blood or other potentially infectious material
- Any case requiring an employee to be medically removed from a site under the requirements of an OSHA health standard
- Any Standard Threshold Shift in hearing (*i.e.*, cases involving an average hearing loss of 10dB or more in either ear)
- Tuberculosis infection as evidenced by a positive skin test or diagnosis by a physician or other licensed health care professional after exposure to a known case of active tuberculosis.

Attachment 2
Accident Prevention Program: Reporting, Investigation, and Review
Responsibility Matrix

Action	Procedure Section	Employee	Supervisor	Project/ Location Manager	Site Health and Safety Rep/ Manager	Business Line Health and Safety Manager	Executive Director Health & Safety
Issue, Revise, and Maintain Procedure	5.1						X
Report All Incidents to Supervisor	6.1	X					
Notify Health and Safety Representative	6.1		X				
Arrange Medical Care	6.1		X		X		
Notify CORE Health Networks of Incident	6.1		X		X		
Initiate/Complete Company Forms	6.1		X		X		
Complete Investigation of incident	6.5		X	X	X	X	
Complete Equipment, Property Damage and General Liability Loss Report Incident	6.4	X		X			
Coordinate and Set up Accident Review Board	6.7			X			
Conduct Accident Review Board	6.7					X	
Participate in Accident Review Board	6.7	X	X	X	X	X	

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Attachment 3
Help Desk/Hotline Notification Guidelines

Any incident, as defined in the bulleted items below, requires corporate notification **as soon as practical but not longer than one hour after occurrence**, via the Health and Safety Help Desk / Hotline. This requirement is a corporate wide directive and applies to all Shaw companies, not just Shaw E&I. As such, the responsibility for whom makes this notification has purposefully not been defined. This is due to the various types of projects in which Shaw performs activities. Some projects may only consist of three technicians at a site; others may involve multiple levels of site management and consist of 200+ employees. Therefore, the intent is for the supervisory/management person to communicate the notification requirements to his/her employees and make the appropriate determination as to how the notification takes place.

Immediate Corporate Notification via Help Desk: 1-866-299-3445

- Illness and/or injury (doctors cases and above)
- Property damage (dollar amount greater than $2,500)
- Automobile accidents (All)
- Criminal activity (*i.e.*, bomb threat, theft)
- Natural disaster (*i.e.*, earthquakes, flood, storm damage, hurricanes)
- Explosion and/or fires (that results in property damage greater than $2,500 or result in injury)
- Environmental spills/releases (incidents that requires regulatory notification or have an offsite impact)
- Regulatory visit (*i.e.*, OSHA, EPA, DEQ, MSHA, *etc.*)
- Fatalities
- Utility line strikes (All)

Note:

- Help Desk / Hotline notification is in addition to the requirement to inform CORE Health Networks of all incidents requiring off-site medical attention by calling 1-877-347-7429. This call should be made **prior** to transporting the employee such that they can coordinate physicians' services prior to arrival of the employee to the medical facility.
- As stated above, the notification requirements are a corporate directive and apply to all Shaw companies. Accordingly, Shaw E&I managers/supervisors should use sound judgment as it pertains to the two bulleted items that have been highlighted above. Although they may not be desired events, some Environmental spills/releases that occur may not be an uncommon situation at a particular site. In addition, there may be projects in which the EPA or some other regulatory agency visits on some normal frequency. Events such as these, which would typically be unusual at a construction or fabrication site, are not so unusual to some of our environmental projects. As such, a notification to the helpdesk would not be required.

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Shaw® Shaw E & I

Medical Forms
Authorization for Treatment of Occupational Injury/Illness

Employee Name: _____

Social Security #: _____ Injury: ☐ Illness: ☐

Job Title: _____ Incident Date: _____

Project/Location: _____ Location of Accident/Exposure: _____

Telephone Number: _____ H&S Representative: _____

Illness/Injury Description: _____

TO TREATING PHYSICIAN:

In the case of occupational injury/illness, please examine the employee and render necessary conservative treatment directly related to the occupational injury/illness.

Light Duty Work: It is the policy of our company to provide work assignments, whenever possible, for employees with physical activity restrictions resulting from an occupational injury/illness. If the employee will be subject to a restriction, please contact **CORE Health Networks** before releasing the employee, so that a light duty assignment may be arranged.

Medically Unfit to Return to Work: It is the policy of our company to assist employees unable to return to work, due to an injury/illness, in obtaining needed medical care and other available benefits. Medical findings are also used to help evaluate unsafe conditions that may have led to the incident. Please help us assist our employees by contacting **CORE Health Networks** with your findings as soon as possible, preferably before the employee leaves your office, but not later than the close of business on the day of initial treatment.

CORE Health Networks:	Telephone: 1-877-347-7429	Fax: (225) 295-4846
Please Send Reports To Both of the Following:	**CORE Health Networks** ***and*** 12091 Bricksome Ave Suite B Baton Rouge, LA 70816	**The Shaw Group, Inc. Corporate Claims Department** 4171 Essen Lane Baton Rouge, LA 70809

Please Send Bills To: **The Shaw Group, Inc. Corporate Claims Department**
4171 Essen Lane
Baton Rouge, LA 70809

DOCTOR, Please provide:

Medical Diagnosis: _____

Treatment Provided: _____

Recommended Work Limitation/Restriction: _____

Return Visit Needed: No ☐ Yes ☐ Date if Yes _____ First Aid Only ☐

Physician Name: _____ Physician Telephone: _____

Physician Signature: _____ Date: _____

You must call CORE Health Networks for all occupational injuries/illnessesrequiring outside medical treatment: 1-877-347-7429.

Fax completed form to CORE Health Networks (225) 295-4846.

Send Bills to Shaw Corporate Claims Department

Shaw® Shaw E & I

Medical Forms
Authorization for Release of Protected Medical Information

Printed Name: _____ Date of Birth: _____

Address: _____

Social Security #: _____ Home Telephone: _____

Authority to Release Protected Health Information
I hereby authorize the release of medical information, identified in this authorization form, and provide such information to:

CORE Health Networks
12091 Bricksome Ave Suite B
Baton Rouge, LA 70816
Phone: (877) 347-7429
Fax: (225) 295-4846

AND

The Shaw Group Inc.
4171 Essen Lane
Baton Rouge, Louisiana 70809
Phone: 225-932-2500
Fax: 225-932-2636

The information to be released includes the following:

Complete health record	Discharge summary	Progress notes
History and physical exam	Consultation reports	X-ray films / images
Laboratory test results	X-ray & Image reports	Itemized bill
Diagnosis & treatment codes	Complete billing record	

Other (specify) _____

Purpose of the Requested Disclosure of Protected Health Information

I am authorizing the release of my protected health information.

Drug and/or Alcohol Abuse, and/or Psychiatric, and/or HIV/AIDS Records Release

I understand if my medical or billing record contains information in reference to, psychiatric care, sexually transmitted disease, hepatitis B or C testing, previous drug and/or alcohol abuse and/or other sensitive information, I agree to its release.

Check One: ☐ **Yes** ☐ **No**

I understand if my medical or billing record contains information in reference to HIV/AIDS (Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome) testing and/or treatment I agree to its release.

Check One: ☐ **Yes** ☐ **No**

Right to Revoke Authorization

Except to the extent that action has already been taken in reliance on this authorization, the authorization may be revoked at any time by submitting a written notice to ***The Corporate Claims Dept.*** **at** ***The Shaw Group Inc., 4171 Essen Lane, Baton Rouge, Louisiana, 70809***. Unless revoked, this authorization will expire at which time completion of treatment for the injury or illness has been accomplished.

Re-disclosure

I understand the information disclosed by this authorization may be subject to re-disclosure by the recipient and no longer be protected by the Health Insurance Portability and Accountability Act of 1996.

Signature of Patient or Personal Representative Who May Request Disclosure

I understand that I do not have to sign this authorization. However, if health care services are being provided to me for the purpose of providing information to a third-party (*e.g.,* fitness-for-work test), I understand that services may be denied if I do not authorize the release of information related to such health care services to the third-party. I can inspect or copy the protected health information to be used or disclosed. **I hereby release and discharge.** ***The Shaw Group Inc.*** **of any liability and the undersigned will hold** ***The Shaw Group Inc.*** **harmless for complying with this Authorization.**

Signature: _____ Date: _____

Description of relationship if not patient: _____

Shaw® Shaw E & I

Medical Forms
Return-to-Work Examination Form

Exam Date: _____ / _____ / _____ **Employee Name:** _____

Birth Date: _____ / _____ / _____ **Social Security #:** _____ - _____ - _____

Job Title: _____ **Sex:** ☐ Male ☐ Female

Examining Provider: **Please complete this form and fax to CORE Health Networks at (225) 295-4846. Please contact CORE Health Networks at (877) 347-7429 to report status of employee post-treatment.**

Diagnosis: _____

Treatment Plan: _____

Medications: _____

Physical Therapy: _____

Other: _____

☐ May return to full duty work effective ___/___/

☐ May return to limited duty from ___/___/___ to ___/___/

☐ Unable to return to work from ___/___/___ to ___/___/

WORK LIMITATIONS:

☐ Restricted lifting/pushing/pulling: maximum weight in lbs: _____ (Company limits all lifting to ≤ 60 lbs).

☐ Work only with right/left hand. ☐ Restricted repetitive motion right/left hand.

☐ Sitting job only. ☐ Restricted operation of moving equipment.

☐ Other: _____

FOLLOW-UP PLAN:

☐ Release from care.

☐ Schedule for follow-up appointment on ___/___/___.

Time _____ AM/PM

☐ Referral to _____

Appointment date ___/___/___ Time _____ AM/PM

Comments: _____

Examiner's Name (*print*)	Examiner's Signature	Date

Shaw® Shaw E & I

Supervisor's Employee Injury/Illness Report Form

EMPLOYEE INFORMATION		
Employees Social Security Number	Claim Number	
Employee's Name:	Home Phone Number:	
Home Address:		Business Line Code:
Male ☐ Female ☐	Date of Birth:	Hire Date:
Dependents:	Dependents under 18:	Marital Status:
Occupation:		Department Name:
State Hired:	Currently Weekly Wage:	Hourly Wage:
Hours/Days Worked Per Week:	Days Per Week:	Hours Worked Per Day:
Employment Status:	Employee Report No.: NA	Employee ID No.: NA
Salaried Continued:	Paid for Date of Injury:	Education No. of Years:
Ever injured on the Job:	Supervisors Name and Phone:	

EMPLOYER INFORMATION	
Employer Name: **The Shaw Group, Inc.**	Work Location:
Project Name:	Project Number:
Contract Name:	Contract Number:
Contact Name: **Troy Allen**	Telephone Number: **1-800-747-3322**
Employer SIC:	Employer Location Code:
Employer FED ID:	Employer Code: NA
Nature of Business:	
Policy Number:	

ACCIDENT INFORMATION	
Date and Time of Injury:	
Did the Accident Occur at the Work Location	If no, where did the accident occur? NA
Accident Address:	
Nature of Accident:	
Give a Full Description of the Accident (Be as factually complete as possible):	
Are Other WC Claims Involved" No	Date and Time Reported to Employer:
Person Reported To:	

Shaw® Shaw E & I

WITNESS INFORMATION
Were There Any Witnesses?
If Yes, List Names and How to Contact Them:

INJURY INFORMATION		
Which Part of the Body Was Injured? (*e.g.*, Head, Neck, Arm, Leg)		
What was the Nature of the Injury? (*e.g.*, Fracture, Sprain, Laceration)		
Part of the Body Location? (*e.g.*, Left, Right, Upper, Lower)		
Injury Description:		
Source of Injury:		Is Employee Hospitalized?
Lost Time:	If Yes, What was First Full Day Out:	
Date Last Day Worked:	Date Disability Began: NA	
Date Returned to Work:	Estimated Return Date: NA	

MEDICAL INFORMATION		
ER Treated & Released:	Hospitalized:	Phy./Clinic:
Hospital – Name, Address, Phone Number:	Was Employee Transported via Ambulance: Yes No	
NA		
Clinic – Name, Address, Phone Number:		

ADDITIONAL COMMENTS AND INFORMATION

REPORT PREPARED BY	
Name:	Title:
Signature:	Phone Number:

REPORT ALL WORKER'S COMPENSATION INJURIES TO SHAW CLAIMS DEPARTMENT
FAX REPORT WITHIN 24 HOURS OF INCIDENT TO **225-932-2636**.
Phone all injuries/illnesses to **Shaw Notification Hotline/Helpdesk 1-866-299-3445**

Shaw® Shaw E & I

Incident Investigation Report

*** Must Be Completed Within 72 HOURS & Relevant Support Documentation Must Be Attached/ Submitted***

Investigation Date _____ Date of Incident _____

Employee Name _____ Supervisor Name _____

Project Number _____ Project Name _____

Contract Number _____ Contract Name _____

Location of Incident _____

Incident Classification

Injury	☐ First Aid	Vehicle	☐ Chargeable	DOT	☐ DOT Vehicle
	☐ OSHA Recordable		☐ Non-chargeable		☐ DOT Reportable
	☐ Lost Workday				
	☐ Restricted Workday	Near Miss	☐	General Liability	☐

Description (Provide facts, describe how incident occurred, provide diagram [on back] or photos)

_____

_____

_____

Analysis (What unsafe acts or conditions contributed to the incident?)

_____

_____

_____

Corrective Action(s) (List corrective action items, responsible person, scheduled completion date)

_____

_____

_____

Witness Names (Complete Attachment 6 – Employee Witness Statement)

_____

_____

_____

Investigated By: _____ _____ _____

Print Name Signature Date

Project/Location Mgr.: _____ _____ _____

Print Name Signature Date

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Shaw® Shaw E & I

Employee Witness Statement

MUST BE COMPLETED WITHIN 24 HOURS OF THE INCIDENT

This form should be completed by every employee working in the crew of the injured employee and by every other employee with knowledge of events or circumstances involved in the incident.

This information is being solicited from you so that the company can accurately assess the reported incident to avoid similar occurrences in the future. Describe only the facts for which you have personal knowledge. If you have no knowledge of the incident, write "no knowledge."

Company: _____

Exact Location of Incident/Accident: _____

Name of Injured Employee: _____

Date of Incident/Accident: _____ Time _____ am pm

Date of this Statement: _____ Time _____ am pm

Time your shift begins? _____ am pm Ends _____ am pm

Witness Information:

Name: _____

Home Phone No.: _____

Home Address: _____

County: _____ Zip: _____

Witness' Supervisor Name: _____

If not employed by Shaw E&I, enter name of company: _____

Company Phone Number: _____

Did you see the Incident/Accident? _____

How far from you (approx., in feet) did the Incident/Accident occur? _____

Stating only factual information, describe in detail what happened and include any applicable events leading to the Incident/Accident:

_____

_____

_____

_____

I certify that, to the best of my knowledge, all of the above information is complete, accurate, and factual. I acknowledge that the intentional falsification or altering of facts or making misleading statements may be grounds for disciplinary action.

_____ _____

Witness Signature/Date Print Name

Shaw® Shaw E & I

Accident Review Board

DATE:	LOCATION:
BOARD MEMBERS:	
ACCIDENT DATE:	EMPLOYEE(S) INVOLVED IN INCIDENT:
INVESTIGATION COMPLETE: YES ☐ NO ☐	ACCIDENT CLASSIFICATION:

The following information must be provided by the Accident Review Board for this incident (print):

SUPERVISOR: _____ **PROJECT/LOCATION MGR.:** _____

POTENTIAL CAUSE OF ACCIDENT:

ACTION BY BOARD*:

* All actions by the Accident Review Board are subject to final review by the Human Resources and Legal Departments.

ACCEPTED:

_____ _____

(Employee Signature) (Supervisor Signature)

APPROVED: REJECTED FOR:

_____ _____

(Project/Location Manager)

APPROVED: REJECTED FOR:

_____ _____

(Business Line Health and Safety Manager or Designee)

APPROVED: REJECTED FOR:

_____ _____

(Business Line Vice President)

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Shaw® Shaw E & I

Vehicle Accident Report

ACCIDENT DESCRIPTION

This report is to be initiated by the employee involved in the accident or his/her direct supervisor. Please answer all questions completely. This report must be forwarded to the appropriate health and safety representative within 24 HOURS of the accident. Attach police report.

ACCIDENT DATE _____ TIME _____ ☐ A.M. or ☐ P.M.

LOCATION OF ACCIDENT (CITY, STATE) _____

DESCRIPTION OF ACCIDENT _____

_____

_____

WITNESS _____ PHONE NO. _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

POLICE OFFICER'S NAME AND BADGE # _____ DEPARTMENT _____

COMPANY VEHICLE

DRIVER _____ DRIVERS LICENSE NO. _____ STATE _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

WORK PHONE NO. _(____)_____ S.S. NO. _____ PROJECT NAME/NO. _____

VEHICLE NO. _____ YEAR _____ MAKE _____ MODEL _____ LICENSE PLATE NO. _____

STATE _____ VEHICLE OWNER: ☐ COMPANY ☐ LEASED/RENTED ☐ PRIVATE VEHICLE

VEHICLE TYPE: ☐ COMMERCIAL MOTOR VEHICLE ☐ NON-COMMERCIAL

IF NOT COMPANY-OWNED: OWNER _____ PHONE NO _(____)_____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

VEHICLE DAMAGE _____

NO. OF VEHICLES TOWED FROM SCENE _____ NUMBER OF INJURIES _____ NUMBER OF FATALITIES _____

WERE HAZARDOUS MATERIALS RELEASED? ☐ NO ☐ YES IF YES, DESCRIBE MATERIALS _____

_____

OTHER VEHICLE

DRIVER _____ DRIVERS LICENSE NO. _____ STATE _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

PHONE NO. _(____)_____ S.S. NO. _____

OWNER'S NAME (☐ CHECK IF SAME AS DRIVER) _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

INSURAMCE COMPANY _____ POLICY NO.: _____

AGENT'S NAME _____ PHONE NO.: _(____)_____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

VEHICLE YEAR. _____ MAKE _____ MODEL _____ PLATE NO. _____ STATE _____

VEHICLE I.D. NO. _____

VEHICLE DAMAGE _____

PASSENGERS ☐ NO ☐ YES INJURIES ☐ NO ☐ YES (If yes, list names and telephone numbers below)

_____

_____

_____

Shaw® Shaw E & I

Vehicle Accident Report

WEATHER: ❑ Clear ❑ Cloudy ❑Fog ❑Rain ❑Sleet ❑Snow Other ___
PAVEMENT: ❑Asphalt ❑Steel ❑Concrete ❑Wood ❑Gravel/Dirt
❑Brick/Stone Other _____
CONDITION: ❑Dry ❑Wet ❑Icy ❑Pot Holes Other _____
TRAFFIC CONTROL: ❑Traffic Light ❑Stop Sign ❑Railroad ❑No Intersection ❑No Control
ROADWAY: No. of Lanes Each Direction: _____ ❑Residential ❑Divided Highway ❑Undivided Highway

Draw and name roadways showing each vehicle, direction of travel, and point of impact. Indicate travel before the accident with a solid line, and post-accident movement with a broken line.

SYMBOLS:

Your Vehicle ①

Other Vehicle(s) ②③

Pedestrian

Stop Sign

Yield

Railroad ‡

ADDITIONAL INFORMATION: _____

_____

_____

Employee _____ (Print) _____ (Signature) _____ (Date)

Supervisor _____ (Print) _____ (Signature) _____ (Date)

H&S Rep. _____ (Print) _____ (Signature) _____ (Date)

Attach police report to vehicle accident report

Report must be faxed to Corporate Claims Department (Fax: 225-932-2636) within 24 hours, or not later than next business day.

Report all vehicle accidents to Shaw Notification Hotline/Helpdesk (Phone: 1-866-299-3445)

Shaw® Shaw E & I

Equipment, Property Damage, and General Liability and Loss Report

This report is to be completed for all losses or damage to company property in excess of $2,500.00 and all third party damage, regardless of value, resulting from company activities.

PROJECT/LOCATION: _____ PROJECT NO.: _____ DATE: _____

PROGRAM NAME: _____ TASK ORDER NUMBER: _____

ADDRESS: _____

HOW DID DAMAGE OR LOSS OCCUR: _____

_____

_____

DESCRIPTION AND VALUE ($) OF DAMAGED/LOST/STOLEN PROPERTY: _____

_____

LOCATION OF DAMAGED/LOST/STOLEN PROPERTY (Before Loss): _____

_____

DATE AND TIME OF DAMAGE, LOSS, OR THEFT: Date: _____ Time: _____ a.m./p.m.

OWNER OF DAMAGED/LOST/STOLEN PROPERTY:

Name _____ Phone No. (____) _____

Address _____ City _____

Employer and Address _____

INJURED PARTIES (Also complete a Supervisor's Employee Injury Report if a Company Employee):

Name _____ Phone No. (____) _____

Address _____ City _____

Employer and Address _____

Description of Injury _____

WITNESSES:

1. Name _____ Phone No. (____) _____

   Home Address _____ City _____

   Employer and Address _____

2. Name _____ Phone No. (____) _____

   Home Address _____ City _____

   Employer and Address _____

WERE PICTURES TAKEN? ☐ YES ☐ NO

WERE POLICE NOTIFIED? ☐ YES ☐ NO DEPT. _____ REPORT NO. _____

COMPLETED BY: _____ _____ _____
(Print) (Signature) (Date)

PROJECT/LOCATION MANAGER: _____ _____ _____
(Print) (Signature) (Date)

REPORT MUST BE FAXED TO:
CORPORATE CLAIMS DEPARTMENT (FAX: 225-932-2636)
WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY

Shaw® Shaw E & I

Injured Employee Statement

MUST BE COMPLETED WITHIN 24 HOURS OF THE INCIDENT

This form should be completed by the injured employee involved in the incident. Describe only the facts for which you have personal knowledge. If you have no knowledge of a particular question, write "no knowledge."

Company: _____

Exact Location of Incident/Accident: _____

Name of Injured Employee: _____

Date of Incident/Accident: _____ Time _____ am pm

Date of this Statement: _____ Time _____ am pm

Time your shift begins? _____ am pm Ends? _____ am pm

Name of Known Witnesses:

Name: _____

Name: _____

Name: _____

Name: _____

Your Immediate Supervisor's Name: _____

If not employed by Shaw E&I, enter name of company and phone number: _____

Have you had prior injury similar to this injury? _____

Was it while you were at work? _____

What date did the prior injury occur? _____

Stating only factual information, describe in detail what happened and include any applicable events leading to the Incident/Accident:

_____

_____

_____

_____

I certify that, to the best of my knowledge, all of the above information is complete, accurate and factual. I acknowledge that the intentional falsification or altering of facts or making misleading statements may be grounds for disciplinary action.

_____ _____

Signature/Date Print Name

Attachment 2
Safety and Industrial Hygiene Personnel Resumes

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Mark J. Vennemeyer

Professional Qualifications

Mr. Vennemeyer has performed waste management activities for twelve (12) years for a variety of clients. At present, he is a Construction Quality Control Manager and has served as Transportation and Disposal Coordinator for Shaw's Government Services division in California. He is responsible for ensuring quality standards of workmanship on various projects, inspection of activities and adherence with contractual requirements, waste characterization/classification, packaging, scheduling, regulatory oversight, providing technical assistance to the Procurement department in matters of Waste Transportation and Disposal Subcontracts, waste sampling, coordination and management of resources necessary to perform off-site transportation and disposal, preparation of waste profiles and shipping papers, and tracking waste shipments to ensure compliance with all applicable regulations.
Mr. Vennemeyer is experienced in "unknown" identification, Treatment Technology requirements, Federal and State (California) waste regulations, and database management. He has been involved in a multitude of waste shipments covering a wide variety of waste streams.

Education

Bachelor of Science, Chemistry, University of California, Irvine, Irvine, California, 1992

Additional Training/Continuing Education

First Aid / CPR, Concord, CA, 2007
Site Safety Officer, Irvine, CA, 2006
Construction Quality Management for Contractors, Sacramento, CA, 2005
Shipping Hazardous Materials by UPS, San Jose, CA, 2005
IATA Dangerous Goods Shipment, Emeryville, CA, 2004
Hazardous Waste Manifesting, Alameda, CA, 2002
Cyanide Training, Richmond, CA, 1998
Hazardous Waste Supervisor, Richmond, CA, 1998
Hazard Categorization, San Jose, CA, 1995
Emergency Response Training, San Jose, CA, 1995
Radiation Worker 2, Lawrence Livermore National Lab, 1994
40-Hour Hazardous Waste Operations, Sacramento, CA, 1992

Experience and Background

06/2007 - present
Quality Control Manager / Site Health and Safety Officer, Shaw Environmental & Infrastructure, Inc., Government Services, Alameda, California

Quality Control manager and Site Safety officer at the Alameda Point project(s). Pojects included contruction of in-situ Remediation systems (DVE for petroleum contamination, 6-phase underground heating for DNAPL plume).

04/2006 - 06/2007
Quality Control Manager, Shaw Environmental & Infrastructure, Inc., Government Services, San Francicso, California

Served as Quality Control Manager and T&D Coordinator at former Treasure Island naval base. Acted as liaison between Navy construction personnel (engineers, Construction technicians) and Shaw. Provided daily reporting and documentation of activities performed each day.

12/2005 - 04/2006
Quality Control Manager / Inspector, Shaw Environmental & Infrastructure, Inc., Government Services, San Diego, California

Worked with operations personnel to establish QC procedures and documentation of Navy owned Treatment, Storage and Disposal facility. Inspection of satellite facility(ies) for compliance to Navy and regulatory requirements.

02/2005 - 11/2005
Construction Quality Control Manager, Shaw Environmental & Infrastructure, Inc., Government Services, Concord, California

Responsibilities include support of client projects as quality control manager. Also responsible for interaction with client's technical representatives, preparing portions of reports, oversight of field work, inspection of materials and work performed.

The following is a summary of key projects:
Quality Control Manager, Crow's Landing Flight Facility, 836557, 100358, 101454, U.S. Navy, Crow's Landing Flight Facility, 02/2005 - Present
Quality Control manager for Crow's Landing Flight Facility in Crow's Landing, CA. The project involved several contract task orders (CTOs) to perform different remedial actions. The highlights included:
Removal action of waste soil and debris at former waste pits. Investigation of potential Munitions and Explosives of Concern sites using non-intrusive geophysical surveys and exploratory trenching.

Awards/Client Commendations:
President's Safety Award

05/2002 - 02/2005
Transportation and Disposal Coordinator, Shaw Environmental & Infrastructure, Inc., Government Technical Services, Concord, California

Responsibilities include providing technical support for clients as a transportation and disposal coordinator. Also responsible for waste characterization, profiling, manifesting, coordination of subcontractors and disposal facilties for remedial actions, waste tracking and technical documentation of removal / disposal actions.

The following is a summary of key projects:
T&D Coordinator, Carmel Valley Manor, , JM Electric, Carmel, CA, $20,000.00, 03/2005 - 03/2005
Removal and disposal of aged transformers and electrical equipment. Tasks included sampling, characterizing, profiling, manifesting, packaging of equipment according to all applicable federal,

state and local regulations.

Transportation and Disposal Coordinator, Hunters Point Shipyard, various, U.S. Navy, San Francisco, CA, 02/2002 - 02/2005
Transport and Disposal Coordinator for various projects at Hunters Point. Responsible for waste sampling, characterization, profiling, manifesting, coordination of waste shipments and technical documentation of disposal activities.
During the span of the project, over 20,000 tons of waste was removed from site and sent to various permitted treatment/disposal facilties.

Transportation and Disposal Coordinator, Alameda Point, former Alameda Naval Air Station, various, U.S. Navy, Alameda, CA, 02/2002 - 02/2005
Coordination of disposal activities for various remedial projects at the Former Alameda Naval Air Station. Tasks included Investigation Derived and Treatment by-product Waste sampling, characterization, profiling, manifesting and coordination of disposal.

Awards/Client Commendations:
President's Safety Award

Transport and Disposal Coordinator, ORC - Cyril, 100735, US EPA, Cyril, OK, $6,000,000.00, 09/2003 - 06/2004
Demolition of a shut-down oil refinery. Disposal of all wastes associated with the facility including petroleum by-products, chemical catalysts, construction demolition debris, abandoned drummed wastes and "laboratory size" chemical bottles.
Much of the structure was recycled as scrap metal, but the area was cleared of Asbestos prior to any demolition activites starting.

Transport and Disposal Coordinator, Hamilton Army Airfield, US Army Corp of Engineers, Novato, CA, 05/2002 - 12/2002
This project was the removal from site and disposal of several thousand tons of waste excavated soil that was staged on site at an Army Airfield that was in closure. Tasks included classification of waste based on analytical results of samples, profiling of waste to seleceted TSDFs, tracking of waste shipments (using the manifest shipping documents) and confirmation of costs associated with transportation and disposal of waste.

12/2000 - 02/2002
Transportation and Disposal Coordinator, IT Corporation (The Shaw Group Inc. acquired substantially all of the operating assets of The IT Group, Inc., on May 23, 2002), Government Services, Concord, California

Responsibilities included providing technical support to client projects as Transport and Disposal coordinator. Also responsible for field support of waste disposal operations, support of business development activities and composition of certain technical sections of reporting documents.

Mark R. Egan

Professional Qualifications

Mr. Egan is a quality-minded, self-motivated professional with over Thirty years of environmental, health and safety experience in all phases of remediation and construction. For the past 12 years, he has served as a health and safety officer on various DOD remediation projects in the San Francisco Bay Area, San Joaquin Valley,and San Diego areas where he has worked successfully with the California EPA and RWQCB. He is a strong leader with proven ability to create positive change. Works well with all levels of the organization, Regulatory Agencies, clientele, and a team player.

Education

Certificate Program, Health and Safety, Las Positas Junior College, Livermore, California, 1993

Additional Training/Continuing Education

AHERA Refresher for Asbestos Bldg Insp / Mgmt Planners , COEH (Cal Berkeley) , 2008
AHERA Refresher for Asbestos Contractors and Supervisors , COEH (Cal Berkeley) , 2008
AHERA Refresher for Designing Asbestos Abatement Projects , COEH (Cal Berkeley) , 2008
OSHA 10 hour Construction Safety Course, Summit Training, 2008
Competent Person Fall Protection Training, Turner Safety, 2008
AHERA Refresher for Designing Asbestos Abatement Projects , COEH (Cal Berkeley) , 2007
AHERA Refresher for Asbestos Contractors and Supervisors , COEH (Cal Berkeley) , 2007
AHERA Refresher for Asbestos Bldg Insp / Mgmt Planners , COEH (Cal Berkeley) , 2007
8 Hour MSHA Refresher, Shaw Environmental, 2007
24 Hour MSHA New Minor training, Shaw Environmental, 2006
Competent Person Drilling Oversight (CPDO), Shaw Environmental, 2006
Continuing Education for Lead Professionals (Refresher), COEH (Cal Berkeley), 2006
AHERA Refresher for Asbestos Bldg Insp / Mgmt Planners , COEH (Cal Berkeley), 2006
AHERA Refresher for Asbestos Contractors and Supervisors , COEH (Cal Berkeley) , 2006
AHERA Refresher for Designing Asbestos Abatement Projects, COEH (Cal Berkeley), 2006
Construction Quality Management for Contractors, US Army Corps Sacramento, 2006
Designing Asbestos Abatement Projects AHERA Refresher, Cal Berkeley Extension, 2005
AHERA Refresher for Asbestos Contractors and Supervisors, Cal Berkeley Extension, 2005
AHERA Refresher for Asbestos Bldg Insp / Mgmt Planners, Cal Berkeley Extension, 2005
OSHA 10- Hour Construction Safety, Shaw Environmental, 2004
Building Inspection / Management Planning for Asbestos, Cal Berkeley Extension, 2004
Practices and Procedures in Asbestos Control, Cal Berkeley Extension, 2004
Designing Asbestos Abatement Projects, Cal Berkeley Extension, 2004
Lead Based Paint Abatement / Supervisor and Monitoring, Cal Berkeley Extension, 2004
Lead Based Paint / Inspection and Risk Assessment, Cal Berkeley Extension, 2004
HAZWOPER 8-Hour Supervisor, Network Environmental Systems, 1999
Confined Space Entry Rescue, Safety Center Inc., 1999
Excavation Competent Person, SAFETYPRO, 1998
Confined Space Entry Supervisor, IT Corporation, 1997
Certificate of Completion Occupational Safety and Health, Las Positos JC, Livermore, 1993

Registrations/Certifications/Licenses

Construction Health & Safety Technician, 2006, ID # 7827605561, Active, California, 08/2011
USACE Construction Quality Manager, 2008, Active, Nationwide, 04/2011

Security Clearance

Secret Clearance, Defense Investigative Services, 1983, Inactive, 04/1995

Experience and Background

05/2008 - Present
Environmental Health & Safety Manager, Shaw Environmental & Infrastructure, Inc., Federal, Concord, California

Representing the Program CIH during on-site field activities by implementing the Site Health and Safety Plan.

Creates Health and Safety Plans for projects.

Verifying the necessary training and medical clearances required for hazardous waste site work.

Conducts site/safety orientation, reviews project hazard communication program including emergency response and evacuation procedures, use of MSDS?s and labeling of hazards.

Auditing all site activities including excavation and trenching, confined space entry, asbestos, and lead abatement, site demolition, soil treatment, pressure washing activities, heavy equipment operation, and decontamination activities associated with anthrax and other site contaminants of concern.

Monitor employee use of required personal protective equipment.

Air monitoring for various site contaminants and explosive and/or oxygen-deficient atmospheres.

Daily calibrating of all air monitoring equipment.

Conduct daily tailgate/safety meetings, as well as the monthly H&S Council and weekly audits.

Provides guidance to the project business administrators for purchasing various safety items.

Performs all training that may be required for project specific activities.

Respond to employee/contractor health and safety concerns.

05/2002 - 04/2008
Health and Safety Coordinator III, Shaw Environmental & Infrastructure, Inc., Concord, California

Representing the Program CIH during on-site field activities by implementing the Site Health and

Safety Plan.

Creates Health and Safety Plans for projects.

Verifying the necessary training and medical clearances required for hazardous waste site work.

Conducts site/safety orientation, reviews project hazard communication program including emergency response and evacuation procedures, use of MSDS?s and labeling of hazards.

Auditing all site activities including excavation and trenching, confined space entry, asbestos, and lead abatement, site demolition, soil treatment, pressure washing activities, heavy equipment operation, and decontamination activities associated with anthrax and other site contaminants of concern.

Monitor employee use of required personal protective equipment.

Air monitoring for various site contaminants and explosive and/or oxygen-deficient atmospheres.

Daily calibrating of all air monitoring equipment.

Conduct daily tailgate/safety meetings, as well as the monthly H&S Council and weekly audits.

Provides guidance to the project business administrators for purchasing various safety items.

Performs all training that may be required for project specific activities.

Respond to employee/contractor health and safety concerns.

The following is a summary of key projects:
Site Health and Safety Officer, Site 12 Final Remedy Removal Action, 122412, US Navy, Treasure Island, 12/2006 - Present
Non-Time Critical Removal Action activities for three solid waste disposal areas located in the Site 12 residential housing area at the former Naval Station on TI. The removal action includes excavation of chemical- and solid-waste contaminated soil within known SWDAs as well as the preemptive excavation of soil within residential backyards which may be impacted by historical grading and mixing of material from the SWDAs. Contaminants of potential concern within the Site 12 SWDAs include polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), dioxin, and lead. The excavated soils will also be screened for radiological contamination for disposal purposes.

Accomplishments:
Project Ongoing

Site Health and Safety Officer, Alameda Point Six Phase Heating Project, 108816, United States Navy SWDiv, Alameda Point Bldgs. 5 and 360, 12/2005 - 11/2006
Health and Safety Coordination for the Six Phase Heating project to remediate an underground plumes at Bldg. 5 and 360. Project included installation of 14, 17, and 20 foot sheetpile as electrodes inside bldg using an excavator with vibratory head. Well drilling and installation,concrete cutting, as well as assembly of electrical and piping systems, concrete pouring and rigging of heavy equipment used during treatment.

Accomplishments:
Project Ongoing

Health and Safety Coordination, Hurricane Katrina Response, 117655, FEMA, New Orleans, Louisiana, 11/2005 - 11/2005
Health and Safety Coordination for Haul and Install project following the Hurricane Katrina Damage in New Orleans. Project involved supervising of mostly subcontractor crews who were installing 30 foot FEMA trailers in residential yards after yards have been assessed for feasibility regarding water, power, sewer accessability.

Accomplishments:
Project Ongoing.

Site Health and Safety Officer, North Island Naval Air Station, 845608, United States Navy SWDiv., NAS North Island (Site 9), 09/2005 - 10/2005
Demobilization and Demolition of site 9 Treatment Facility

Site Health and Safety Officer, Crows Landing Flight Facility, United States Navy SWDiv., Crows Landing Flight Facility, 03/2005 - 09/2005
Project included the Excavation, Transportation, and Disposal of soils from Sites 11, 11b, sites A and B. The project also included sampling using CPT / DPT and Sonic Drilling Methods. Additional potential for problems was made by the presence of UXO at some of the sites as well as work alongside an active irrigation canal.

Accomplishments:
Presidents Award.

Health and Safety Manager, Treasure Island, Various, United States Navy SWDiv., Treasure Island, 11/2000 - 02/2005
During the period of 11/2000 through 02/2005 I was assigned to the Treasure island project as the Health and Safety Manager for all projects. During this period projects including, soil excavation, transportation and disposal, SVE system installation, well drilling and installation, LBP abatement, UST removal, confined space entry, concrete and asphalt removal and installation, tree falling and re planting, Bio remediation, piping system removal and much much more. Work was completed in levels D, Mod D, C and B Personal Protective Equipment.

Accomplishments:
Over 300,000 manhours completed without a lost time accident

Awards/Client Commendations:
Presidents Award achieved.

Health and Safety Officer, Washington DC Anthrax Decontamination (Hart Bldg.), US EPA, Washington DC, 10/2001 - 11/2001
Project included decontamination of the Hart Bldg. due to Anthrax contamination.

Site Health and Safety Officer, Crows Landing Flight Facility, 800063, United States Navy SWDiv, Crows Landing Flight Facility, 09/2000 - 11/2000
The project included the installation of venting, sparging, and monitoring wells as well as the installation of vapor probes at Cluster 1.

Site Health and Safety Officer, Treasure Island, 802287, United States Navy SWDiv, Treasure Island Halyburton Court, 06/2000 - 08/2000
Excavation, Transportation and Disposal of PCB Contaminated soils inside a residential area. As the work was completed in a residential area in very close proximity to occupied housing and a school yard, perimeter air monitoring was conducted with Personal Data Rams (for total dust) as well as Puf Samplers (for PCB's)durng all site activities.

Site Health and Safety Officer, Crows Landing Flight Facility, 800063, United States Navy SWDiv, Crows landing Flight Facility (Cluster 1), 03/2000 - 05/2000
The project included the Cluster 2 SVE system installation activities, Electrical installation, Security Fencing, noise assessment, Natural Gas Piping installation, asphalting.

Health and Safety Officer, Ozol (DESC) Fuel Storage Facility, DESC, Ozol Fuel Storage Facility, Martinez, California, 12/1999 - 02/2000
Decontamination of twelve, four and one half million gallon capacity jet fuel storage tanks.The decontamination was completed while in level "B" Personal Protective Equipment (PPE).

Accomplishments:
Prior to the start of the decontamination procedure all site personnel were trained in Confined Space Entry Rescue procedures.

Site Health and Safety Officer, Treatment of Pesticide Contaminated Soils, 772662, United States Navy, Stockton Rough and Ready Island, 10/1998 - 11/1999
Construction of a Treatment pad approximately 250' x 175' to allow for Treatment of Pesticide Contaminated soils excavated from sites 5G and 5H on Stockton's Rough and Ready Island.Once the pad was completed, the treatment equipment was positioned and treatment commenced. Treatment was conducted using approximately 15-20 20 yard bins 2/3 full of contaminated soils. The bins were then filled with a Proprietary Solvent which was to remove the contaminants.

Site Health and Safety Officer, Hunters Point Shipyard Parcel "B" Removal Action, 773247, United States Navy, Hunters Point Shipyard, 03/1998 - 09/1998
Removal (By Excavators) Transportation and Disposal of over 120,000 Tons of Lead contaminated soils.

Accomplishments:
Integrtad Air Monotoring was conducted to monitor personnel for potential lead exposures. Dust control measures were so successful that after approximately 1 month in Level "C" PPE that the CIH allowed for a downgrade in PPE to modified level "D". A shower decon trailer was utilized until a sufficient amount of data was gathered to allow for a downgrade in PPE.

Site Health and Safety Officer, Big White Housing / CPO Housing Asbestos and LBP Abatement, 772932, United States Navy, Alameda Naval Air Station, 02/1998 - 03/1998
Remediation of Asbestos and Lead Based Paint at the Big White(Officer) and Chief Petty Officer (CPO) Housing. Project began with an XRF survey.

Accomplishments:
Project Completed.

Site Health and Safety Officer, RCRA Closure of Pesticide Mixing and Storage Building., 771839, United States Navy, Stockton Rough and Ready Island, 09/1997 - 11/1997
Asbestos abatement of building, lead based paint abatement of building, and then demolition of

Building. After completion of demolition and transportation and disposal of construction debris the soil below the building was excavated to clean soil and the backfilled and compacted with clean soil.

Accomplishments:
Project Completed.

Site Health and Safety Officer, Removal Action at Sites 5E and 5H, 771345, United States Navy, Stockton Rough and Ready Island, 08/1997 - 09/1997
Demolition, Removal and Disposal of the Imhoff System and related piping for the Base.

Accomplishments:
Project Completed

Site Health and Safety Officer, Hunters Point Drydock #4 Drainage Culvert Clean out, 771649, United States Navy, Hunters Point Shipyard Drydock #4, 06/1997 - 08/1997
Approximately 1500 feet of 48 inch, 36 inch, and 24 inch Drainage culvert was manually and mechanically remediated utilizing Level "B" PPE. The compacted materials (Sand Blast Grit, Paints, Welding Rod, and other shipyard Debris were removed using a 35 pound chipping gun and a truck mounted "Vactor" with flexable hosing and a steel fabricated nozzle.

Accomplishments:
Project Completed. The culverts were later filled with concrete by another contractor.

Site Health and Safety Officer, Hunters Point Shipyard Storn Drain Cleaning, 767631, United States Navy, Hunters Point Shipyard, 10/1996 - 05/1997
High Pressure Washing of over 1,000,000 Lineal feet of storm drain piping throughout Hunters Point Shipyard. Treatment of water used for cleaning system as well as disposal of filtered water into Publicly Owned Treatment works.

Accomplishments:
Project Completed.

05/1997 - 05/2002
Health and Safety Coordinator III, IT Corporation (The Shaw Group Inc., acquired substantially all of the operationg assets of The IT Group, Inc., on May 23, 2002)., Concord, California

Same as above.

10/1996 - 04/1997
Site Health and Safety Officer, Innovative Technical Solutions, Inc., Walnut Creek, California

Supervise all personnel working on storm drain cleaning project.

Implement site safety programs and daily tailgate / safety meetings.

Conduct daily inspections of all sites included in the projects for compliance with company and OSHA standards.

Pro actively investigate future project sites for potential safety hazards.

07/1995 - 07/1996
Waste Management of Alameda County, Innovative Technical Solutions Inc., Walnut Creek, California

Facilitate Safety and Claims Department.

Investigate accident and injury reports.

Conduct safety meetings, shop inspections and provide all training necessary to create a more productive and safe work place.

Monitor driver?s daily logs, and Vehicle Conditions Reports (VCR;s).

Create, modify, and implement safety and incentive programs.

Developed and implemented a Transitional Duty Program for returning injured employees back to their normal and customary positions.

Assess medical clinics for compliance with company agreement.

Correspond and work with various government agencies, Insurance and Safety Supply companies, as well as Medical Clinics.

08/1987 - 07/1995
Health and Safety Director, Service Engineering Company, San Francisco, San Francisco, California

Safety Director for Ship Repair Facility Safety Department. Responsibilities the same as below.

04/1978 - 07/1987
Health and Safety Inspector / Health and Safety Director, Triple "A" Shipyard, San Francisco, San Francisco, California

Safety Inspector and later the Safety Director for Ship Repair facility Safety Department. Conducts daily inspections of all repair activities including work pierside and in Drydock. Work activities included, Structural Steel construction and repair, Piping system installation and repair,Asbestos and Lead abatement, Electrical and Electronic system installation and repair, Confined Space Entry to conduct Tank Cleaning,Sand Blasting and Painting,Machinery Repair and Maintenance,and Heavy Equipment and Material Rigging.

Attachment 3
Proof of Training and Competency

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NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST

U.S. ARMY Corps of Engineers

US Army Corps of Engineers®

NAVFAC

PRESENTS THIS CERTIFICATE TO

Mark Vennemeyer

WHO HAS SUCCESSFULLY COMPLETED

January 28 & 29, 2010

U.S.A.C.E. Construction Quality Management for Contractors

Kugan Panchadsaram PE, PMP
CQM Facilitator
Kugan & Associates Inc.

San Diego Chapter, Inc
"Building Your Quality of Life"

Glen Schaffer
AGC-San Diego Director of Marketing & Education
CQM Training Coordinator

This Certificate is valid for 5 years from the date above

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OHM Remediation Services Corp.

P.O. Box 551
Findlay, Ohio 45840

CERTIFICATE OF COMPLETION

This is to certify that

Jim Click

Has successfully completed the following training:

45-Hour Site Safety Officer Training

including:
24 Hour Site Worker Protection Training
Excavation Competent Person
Confined Space Supervisor
Confined Space Attendant
Confined Space Authorized Entrant
8 Hour Hazardous Waste Supervisor
8 Hour Hazardous Waste Refresher
Hearing Conservation Training Program
Hazard Communication
Bloodborne Pathogen Training

January 27 - 31, 1997

Certificate Number: 97-C-0118

David L. Mummers, CIH
Instructor

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Attachment 4
Guidelines for Standard Safety Disciplinary Actions

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Shaw Environmental and Infrastructure, Inc.
Guidelines for Standard Safety Disciplinary Actions

SEI-GUIDE-004

This document is for the purpose of providing information about the types of conduct, including but not limited to those that constitute just cause for disciplinary actions that may be taken by Shaw.

This guideline is applicable for all projects under the management of Shaw Environmental & Infrastructure, Inc.

Approved By

Bill Winkler – President, Federal Services Business Line

Tom Horst – Executive Vice President, CS&L Business Line

Scott LaGrange – Executive Vice President

Troy Allen – Director of Health & Safety

February 23, 2006
Effective Date

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Guidelines for Standard Safety Disciplinary Actions

1.0 PURPOSE

This guideline has been developed to provide a more consistent approach to disciplinary action when safety violations occur within Shaw E&I. The disciplinary actions imposed may include verbal and written warnings, suspension, or termination as defined in HR207 "Employee Discipline".

This document is for the purpose of providing information about the types of conduct, including but not limited to those that constitute just cause for disciplinary actions and possible disciplinary actions that may be taken by Shaw. This guideline does not require Shaw to impose any particular discipline or progressive discipline, and does not limit Shaw's rights to discipline, suspend, or discharge any employee within Shaw's discretion. Employee's that are part of an active Collective Bargaining Agreement (CBA) will be subject to the disciplinary action guidelines as specified in the CBA under which they are covered.

The employee's direct supervisor and/or functional manager are responsible for ensuring that violations of health and safety policies, procedures, and regulations are dealt with in an appropriate and consistent manner. The following guidance should be utilized to determine disciplinary actions for safety violations.

2.0 TYPES OF VIOLATIONS

Safety violations are typically categorized as minor, moderate, or serious. Additionally, concerning second or repeat violations, it should be understood that a violation should not be compounded or considered repeat / second violation if the previous violation occurred more than 3 years prior. The following provides the disciplinary procedures to be used for the specific class of violation.

2.1 For a **Minor** safety violation, (see examples below), the employee's direct site supervisor or functional manager will meet with the employee(s) and discuss the nature of the safety violation. The recommended corrective action should be selected to prevent future violations.

2.1.1 Should a second, Minor safety violation occur to the same employee, the direct site supervisor and functional manager will meet with the employee and issue a written warning to the employee. The direct supervisor must use the Disciplinary Action Form (Attachment 1). A copy of the Disciplinary Action Form must be submitted to the employee's designated Human Resources representative for review prior to issuing the written warning. A further minor violation either being of the same safety issue by the same employee or a different offense may result in another written warning, suspension from work without pay (non-exempt) for a reasonable period of time, or the direct supervisor may recommend a Discharge Termination. These further violations provide

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for indicators of continued unacceptable behavior and should be accounted for when determining a disciplinary action. The designated Human Resources representative must be consulted prior to suspension or termination.

> NOTE: Under the Fair Labor Standards Act (FSLA), an exempt employee can only be suspended for disciplinary reasons with a reduction in salary, for a violation of a serious safety rule. Exempt employees can be reassigned or instructed not to report to work pending the supervisor's decision whether to recommend termination. However, they must continue to be paid their regular salary.

2.2 A **Moderate** (see examples in section 3.0) safety violation will require the direct supervisor and functional manager to document a verbal or prepare a written warning (using the Disciplinary Action Form) for the safety violation. A copy of the Disciplinary Action Form must be submitted to the Human Resources representative for review prior to issuing the written warning.

In event of a repeat Moderate safety violation by the same employee(s), another written warning may be issued to the employee(s) and the designated Human Resources representative should be contacted to determine if suspension or termination is warranted.

2.3 If a **Serious** safety violation occurs, it will require that, in most cases, the direct supervisor or person observing the violation had to immediately intervene and/or stop the activity. The employee's direct supervisor and functional manager will complete the Disciplinary Action Form for the safety violation that was observed. The designated Human Resources representative shall then be contacted to determine the next course of action, such as suspension or termination (as warranted).

2.3 If a **Terminable** safety violation occurs, it will require that, in most cases, the direct supervisor or person observing the violation had to immediately intervene and/or stop the activity. The employee's direct supervisor and functional manager will complete the Disciplinary Action Form for the safety violation that was observed. The designated Human Resources representative shall then be contacted to determine the appropriate course of action in accordance with requirements set forth in the Human Resources termination process.

Type of Violation	**Recommended Action**
Minor	Verbal warning (but always documented in field notes)
Moderate	Documented verbal or written warning
Serious	Written disciplinary action; suspension or termination
Terminable	Termination

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3.0 EXAMPLES OF SAFETY VIOLATIONS

The following provides typical examples for each class of safety violation. The employee's direct supervisor is responsible for recommending the classification of the violation to the Human Resources representative. The Human Resources representative shall make the final classification of the violation, after consultation with a Health and Safety Manager.

3.1 **Minor** Safety Violation

- Failure to wear specified personal protective equipment, e.g., safety glasses, gloves, safety shoes/boots, etc.
- Failure to perform daily heavy equipment or vehicle inspections
- Performing unsafe work practices
- Horseplay, which doesn't result in an accident or injury
- Failure to attend a scheduled safety meeting
- Improperly dismounting heavy equipment

3.2 **Moderate** Safety Violation

- Repeat of Minor safety violation
- Failure to report a minor first aid injury within a day of the incident, e.g., small cut on finger requiring a band-aid, bee sting, dust particle in eye
- Failure to immediately report an accident or injury, including any equipment or property damage
- Failure to wear specialized PPE, e.g. face shield, respiratory protection, etc.
- Performing unsafe work practices after being corrected
- Horseplay, which didn't but could have resulted in an accident or injury
- Abuse of safety equipment
- Violation of company 60-pound lifting limit or lifting limit of less than 60 pounds designated by a medical professional
- Failure to follow restricted activity guidelines directed by a medical professional
- Neglect in care of company or client vehicles (example GSA)

3.3 **Serious** Safety Violation

- Repeat of Moderate violation
- Knowingly performing unsafe work practices, which could have or did result in serious injury to the employee or other personnel
- Possession/use of drugs (without a prescription) or alcohol on company projects/premises
- Positive drug or alcohol test
- Unauthorized use of company or client vehicles
- Citation for reckless driving or open alcohol container while on company business
- Leaving the scene of an automobile accident without contacting the police, regardless of fault
- Not immediately reporting a work related auto accident, regardless of fault
- Not immediately reporting a work related driving under the influence citation
- Not immediately reporting a work related open alcohol container citation

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- Not immediately reporting a work related hit and run citation
- Horseplay that results in employee injury
- Destroying or damaging company, client or another employee's property
- Tampering with safety equipment
- Direct refusal to wear the designated PPE for a task
- Direct refusal to follow established company Health and Safety Policy

3.4 **Terminable** Safety Violation

- Failure to wear fall protection or not being tied to an anchor point when required
- Disregard for a required lockout / tag out
- Upon conviction or upon pleading no contest to a DUI/DWI while driving on company business

4.0 REFERENCES

HR207 "Employee Discipline"

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ATTACHMENT 1 - DISCIPLINARY ACTION FORM

Employee Name	Employee Number	Position
Date of Hire	Resource Manager	Supervisor Imposing Discipline

I – PERFORMANCE PROBLEM OR MISCONDUCT

The supervisor should complete the applicable provisions of this section.

Most recent date and time of Performance Problem or Misconduct: _____

Location of Incident or Problem: _____

Describe Problem or Misconduct: _____

_____

_____

_____

Describe Explanation Offered by the Employee: _____

_____

_____

_____

II – PRIOR RECORD OF COUNSELING

Has employee received any prior warning? □ Yes □ No

If yes, was the prior warning for the same or a similar problem/offense? □ Yes □ No

Briefly explain: _____

_____

_____

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If the prior warning was for a different problem or type of misconduct, explain: _____

_____

_____

Was the prior warning verbal or written? □ Verbal □ Written □ Both

Date(s) or prior counseling and by whom: _____

III – PRIOR DISCINIPLARY ACTION TAKEN

□ Verbal Warning □ Written Suspension □ Demotion
□ Written Warning □ Transfer □ Suspension
□ Extension of Probation
□ Loss of Privileges (Explain): _____
□ Termination □ Other _____

IV – CURRENT DISCINIPLARY ACTION TAKEN

□ Verbal Warning □ Written Suspension □ Demotion
□ Written Warning □ Transfer □ Suspension
□ Extension of Probation
□ Loss of Privileges (Explain): _____
□ Termination □ Other _____

V – REQUIRED CORRECTIVE ACTION PLAN

The employee must address and correct the problem:

□ Immediately □ Within _____Days

Corrective steps to be taken by employee: _____

_____

_____

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ACKNOWLEDGMENTS

Prepared by (Print & Sign):	Position / Job Location:	Date:
_____ _____		

Human Resources Department Review

Reviewed by (Print & Sign):	Position / Office Location:	Date:
_____ _____		

I certify that I have read this disciplinary action form and fully understand it.

_____ _____

Employee Signature Date

A copy of this form shall be placed in the employee file.

Note: Additional page(s) can be added, as required, making reference to relevant Section(s) where additional space is required to accurately and completely clarify any Section.

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